APPENDIX A

OPINION AND JUDGMENT OF THE UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

GENERAL MOTORS CORPORATION,
Appellant,

v. Appeal No. 82-7.

UNITED STATES INTERNATIONAL TRADE COMMISSION and KUHLMAN CORPORATION,
Appellees.

DECIDED: September 3, 1982

Before, MARKEY, Chief Judge, BALDWIN, MILLER, and NIES, Associate Judges, and FRIEDMAN, Chief Judge.[1]

NIES, Judge.

This appeal is from the final determinations of the International Trade Commission (Commission) with respect to the validity of certain patents in an investigation conducted under 19 USC 1337[2] in which the Commission found unfair

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[1] The Honorable Daniel M. Friedman, Chief Judge, United States Court of Claims, sitting by designation.

[2] 19 USC 1337(a) provides:

(a) *Unfair methods of competition declared unlawful.*

Unfair methods of competition and unfair acts in the importation of articles into the United States, or in their sale by the owner, importer, consignee, or agent of either, the effect or tendency of which is to destroy or substantially injure an industry, efficiently and economically

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methods of competition in the importation of certain spring assemblies used in automatic transmissions for automobiles.[3]

The exclusion order based on this determination, which was entered by the Commission on August 10, 1981, and amended August 19, 1981, prevents appellant from importing such products from its regular Canadian supplier unless licensed by Kuhlman Corporation (Kuhlman), the owner of U.S. Letters Patent 3,782,708 ('708 patent), covering the spring assembly, and 3,866,287 ('287 patent), covering the method of its manufacture. Appellant asserts that the patents on which the exclusion order is based are invalid and that the Commission's final determinations are, therefore, erroneous. We affirm.

Background

Kuhlman is the record owner of the subject patents. The named inventors, Messrs. Dulude and Winbigler, are employees of Kuhlman or its Quality Spring division. On December 1, 1971, Dulude and Winbigler applied for a patent for "Spring Assembly and Methods and Machines for the Manufacture Thereof." As a result of a requirement made by the examiner during the prosecution of the application, a divisional application was filed on February 13, 1973, for "Methods for the Manufacture of Spring Assemblies." The '708 patent issued January 1, 1974, on the original application and contains claims directed solely to a spring assembly apparatus. Claim 1 is representative:

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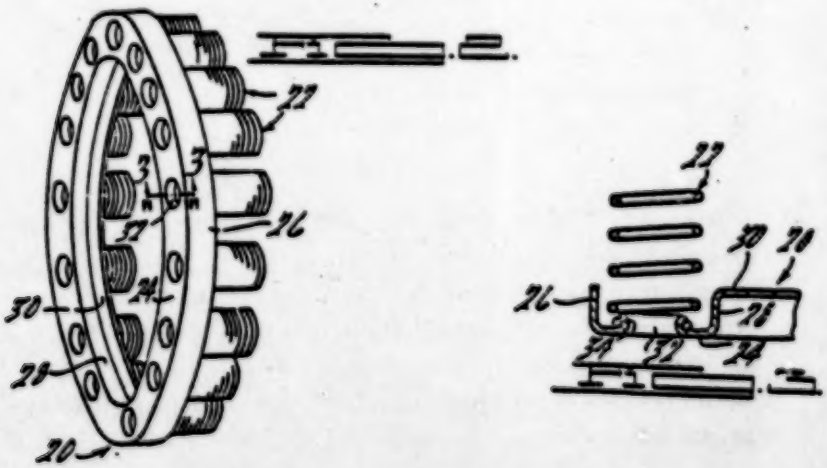
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operated, in the United States, or to prevent the establishment of such an industry, or to restrain or monopolize trade and commerce in the United States, are declared unlawful, and when found by the President to exist shall be dealt with, in addition to any other provisions of law, as hereinafter provided.

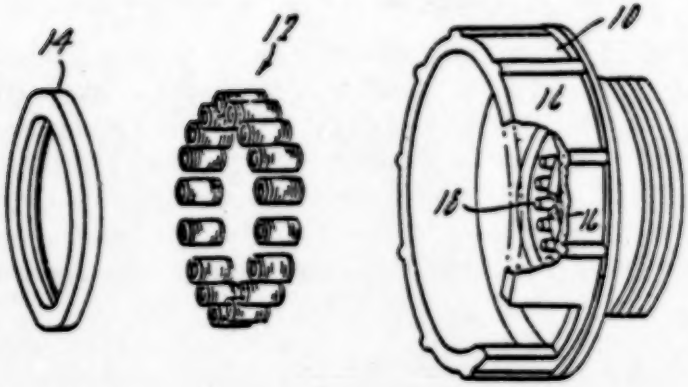
[3] Investigation No. 337-TA-88 entitled "Certain Spring Assemblies and Components Thereof, and Methods for Their Manufacture."

A spring assembly comprising a sheet metal stamping including an annular base portion and a plurality of protuberances formed integrally on said base portion and circumferentially spaced around said annular base portion and projecting in one direction therefrom, and a plurality of compression coil springs individually having a portion of one turn secured by each of said protuberances to said annular base portion, said one turn being unground and of uniform cross-sectional material, all other turns of each of said springs being spaced from said base portion, all portions of said springs other than said one turn lying in their free unconstrained positions, said springs projecting in substantial parallelism with one another from said base portion in said one direction.

The '287 patent issued February 18, 1975, on the divisional application and contains claims directed solely to the method of making the '708 patent's spring assemblies. The disclosures in the two patents are identical except for the claims. Fig. 2 and Fig. 3, shown below, illustrate the format of the claimed spring assembly and a cross-section of a protuberance which secures no more than one bottom turn of a spring, respectively:



In 1969, General Motors (GM) used helical springs in the clutch assemblies of some of its transmissions. The springs for some clutches were assembled by hand; others were assembled by automatic spring feeders before they were secured in place in the clutch. Assembly of the springs by hand often resulted in the tangling of many of the springs. As illustrated below, the springs were placed over bosses 18 on piston 16. They were then carried on a jiggling conveyor, and because they were not secured, frequently fell out of position before they were finally secured in place in the clutch by stamping 14.



Assembly of the springs required high labor costs to assure that all the springs in each assembly reached the clutch, and a large number of tangled springs were lost as scrap. Several GM employees suggested that the springs be preassembled on the stamping, so that they would not become tangled and would remain in position until they were secured in the clutch assembly.

In late 1970, Mr. Kruse, an engineer at GM's Chevrolet-Parma plant, built a model spring assembly by securing the springs to a base with epoxy. This model (Kruse epoxy model) shows the format of the patented spring assembly.

On February 3, 1971, Mr. Kruse submitted a "methods improvements proposal" to attach springs to a spring retainer. He suggested three possible methods of attaching the springs to the stamping: (1) gluing, (2) brazing, or (3) "making projections on retainer which capture spring." The latter suggestion consisted of forming a protuberance over which the spring would be forced and held in place by friction. This friction fit concept was rejected because it would require too close a tolerance and more metal than could be sacrificed from the metal stamping.

On February 24, 1971, Mr. Dooley, a buyer from GM's Chevrolet-Parma plant, showed the Kruse epoxy model to coinventor Dulude and discussed three possible ways to make the spring assembly: (1) welding, (2) adhesive bonding, and (3) the above-described friction fit.[4]

It is not clear whether Dooley indicated that these methods of attachment were tried by GM but did not work, or whether he suggested them as ways that could be pursued. We agree with the Commission that it seems unlikely that Dooley told Dulude that the three suggested methods would work, because he was aware that GM had considered them and had not produced a usable spring assembly.

In any event, Dulude decided that he would form open protuberances on which the springs would be placed and would expand the protruded metal by using a punch in order to stake

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[4] The Kruse epoxy model and the Dooley/Dulude disclosures are collectively referred to herein as the "Dooley disclosures".

or grip the springs. Dulude discussed this idea with coinventor Winbigler, who immediately went to work on the project.

After about two weeks, a few hand-made prototypes were made. Several different types of staking tools were tried. On the first models, the springs had to be straightened by hand.

In March 1971, Dulude showed a prototype of the spring assembly to Dooley, who was impressed with it. Dooley said that he thought that it would save GM the cost of making cast bosses on the piston. The concept quickly was accepted for use in some GM transmissions.

After many months, Dulude and Winbigler developed a process for mass producing these spring assemblies (the process patented in the '287 patent), and began selling them to GM in 1971.

In 1977, P.J. Wallbank Co., Ltd., of Canada (Wallbank) entered the U.S. market selling spring assemblies identical to those being marketed by Kuhlman. On June 23, 1980, Kuhlman filed a complaint with the Commission alleging a violation of 19 USC 1337 in that Wallbank's importation and sale of spring assemblies was unauthorized, the spring assemblies infringed claims 1, 2 and 7-11 of the '708 patent, and the spring assemblies were made by a process which, if practiced in the United States, would infringe certain claims of the '287 patent.

On August 8, 1980, the Commission issued a notice of investigation naming as respondents Wallbank, Ford Motor Co. (Ford), and GM 46 Fed. Reg. 7106 (1980).

Before the administrative law judge (ALJ) respondents took the position that the claims of both patents asserted by Kuhlman would have been obvious in view of the prior art

and, therefore, were invalid under 35 USC 103.[5] Invalidity was also asserted on the basis that Dulude and Winbigler failed to disclose their best mode of carrying out the invention in contravention of the first paragraph of 35 USC 112.[6]

Upon completion of the investigation, the ALJ recommended the Commission find no violation based on the claims of the '708 patent which she considered invalid over the prior art. The ALJ did, however, recommend that a violation be found on the basis that certain claims of the '287 patent, which she considered valid, would be infringed by Wallbank's process of manufacturing spring assemblies if practiced in the United States.

The ALJ rejected respondent's position regarding the patentee's failure to disclose the best mode of practicing the invention as required by § 112.

The Commission rejected the ALJ's finding that the '708 patent was invalid over the prior art but otherwise adopted her recommendations (except in particulars not relevant here).

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[5] 35 USC 103 provides:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

[6] 35 USC 112, first paragraph, provides:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, *and shall set forth the best mode contemplated by the inventor of carrying out his invention.* [Emphasis added.]

The Commission thereupon entered the subject exclusion order, which became final for purposes of appeal on October 10, 1981, and which provides that assemblies either infringing claims 1, 2, or 7-11 of the '708 patent or made by processes claimed in the '287 patent are excluded from importation into the United States except under license from Kuhlman.

Only GM appeals, renewing its challenge to the validity of the '708 patent under § 103 and to both patents under § 112, but not otherwise attacking the order entered by the Commission.

OPINION

Standard for Review

As pointed out in the Commission's brief, this is the first appeal to raise a question of the standard for review of Commission determinations concerning validity of a U.S. patent since the amendment of 19 USC 1337(c) by the Customs Courts Act of 1980, P.L. 96-417, § 604, 94 Stat. 1744.[7] The Commission argues that, in view of the amendment, "the appropriate standard of review for the issues presented in this appeal is substantial evidence."

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[7] By this amendment 19 USC 1337(c) was revised to read:

> Any person adversely affected by a final determination of the Commission under subsection (d), (e) or (F) [of this section] may appeal such determination to the United States Court of Customs and Patent Appeals for review in accordance with chapter 7 of Title 5.

The relevant portion of Title 5, 5 USC 706(2)(E) provides:

> To the extent necessary to decision and when presented, the reviewing court shall decide all relevant questions of law, interpret constitutional and statutory provisions, and determine the meaning

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In *Consolo* v. *Federal Maritime Comm'n*, 383 U.S. 607, 619-20 (1966), the Supreme Court provided the following exposition of the "substantial evidence" test:

> "We have defined "substantial evidence" as "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Consolidated Edison Co.* v. *Labor Board*, 305 U.S. 197, 229 [1938]. "[I]t must be enough to justify, if the trial were to a jury, a refusal to direct a verdict when the conclusion sought to be drawn from it is one of fact for the jury." *Labor Board* v. *Columbian Enameling & Stamping Co.*, 306 U.S. 292, 300 [1939]. This is something less than the weight of the evidence, and the possibility of drawing two inconsistent conclusions from the evidence does not prevent an administrative agency's finding from being supported by substantial evidence. [Footnote omitted.]

While we agree with the Commission's position that factual determinations must be reviewed under this standard, we do not agree that all issues presented in this appeal are merely questions of fact.

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> or applicability of the terms of an agency action. The reviewing court shall —
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> (2) hold unlawful and set aside agency action, findings, and conclusions found to be —
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> (E) unsupported by substantial evidence in a case subject to sections 556 and 557 of this title [5 USC §§556 and 557] or otherwise reviewed on the record of an agency hearing provided by statute . . .

In *Stevenson* v. *USITC*, 67 CCPA 109, 112, 612 F.2d 546, 549, 204 USPQ 276, 279 (1979), this court stated:

> Obviousness is a legal conclusion based on factual evidence, *Graham* v. *John Deere Co.*, [383 U.S. 1 (1966)], . . . and not a factual determination.

The factual determinations from which to draw the conclusion of obviousness were set out by the Supreme Court in *Graham* v. *John Deere Co.*, 383 U.S. 1, 17 (1966):

> Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent act are resolved.

These parameters provide guidelines but, nevertheless, leave difficult questions to be resolved by appellate courts on the more precise boundaries, as indicated by several recent decisions involving appeals from jury trials in patent cases where the same standard must be applied.[8] However, the task here is not so difficult. We are in entire agreement with the Commission's factual determinations and with its conclusions that the subject patents have not been proved invalid.

The Prior Art

The prior art references on which GM relies to show obviousness of the spring assembly in the '708 patent are U.S. Patent No. 3,122,829 to Schaad and certain Delco-Moraine Brake Expander Springs (D-M Spring),[9] both of which had

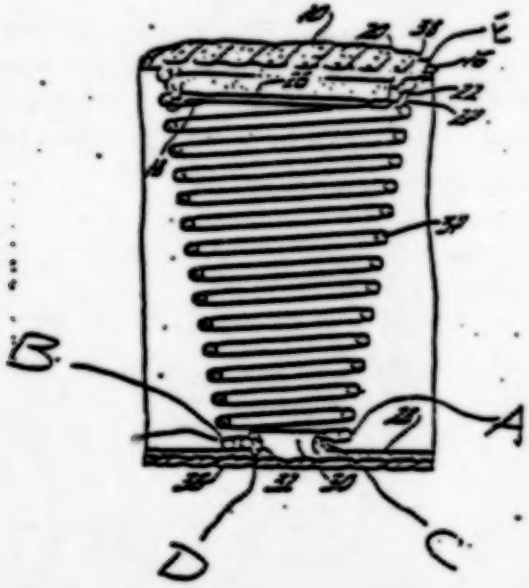
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[8] *See*, e.g., *Dual Mfg. & Eng. Inc.* v. *Burris Ind. Inc.*, 619 F.2d 660, 205 USPQ 1157 (CA 7) (In Banc), *cert. denied*, 449 U.S. 870 (1980).

[9] The D-M spring is a collective reference to several types of springs used in the Delco-Moraine Brake assembly. However, they are virtually identical and GM does not assert them separately.

been considered by the examiner, and the Dooley disclosures, which were not.[10]

The Schaad patent discloses a plurality of conical springs for use in automobile seat cushions. The bottom 1½ turns (dead turns) of each spring are securely staked to a metal pan by sliding the dead turns over a protuberance stamped in the pan and bending or crimping the entire rim portion of the protuberance over the dead turns (360° stake), thus:



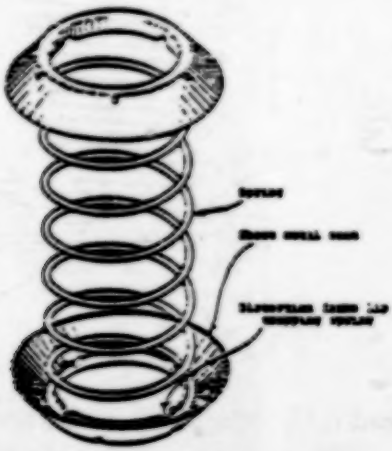
[The dead turns comprise cross-sections B, C, and D.]

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[10] While GM injects overtones of fraud in the patentees' failure to bring the Dooley disclosures to the attention of the examiner, this attack is not further developed.

The springs are held in substantial parallelism by a cover plate (marked as 10) with preformed channels into which the tops of the springs are fitted. The dead turns are wasted turns of the spring because they serve only to allow attachment of the spring to the pan and, being restrained, perform no spring functions (e.g., bending, twisting, etc.). In contrast, the subject invention reduces the number of useless dead turns while maintaining a secure attachment and does not require a plate comparable to cover plate 10 to achieve parallelism.

The D-M spring, a single spring for use in a brake assembly, has only one dead turn held to a sheet metal seat by means of staking. Unlike the Schaad patent, the attachment is not a 360° stake but is accomplished by bending the metal over at four discrete points around the periphery of the protuberance, thus:



A secure attachment is not required or achieved in the D-M spring. The sheet metal seat must only be temporarily held to the spring until the entire spring/seat apparatus is placed in a brake assembly. The brake assembly captures the spring/seat apparatus, thereby holding the seat against the spring at all times.

Secure attachment was necessary in the GM transmission, and the Dulude solution to the problem not only achieved this objective but also resulted in cost savings. As stated by the Commission:

> Under the GM specifications, the springs had to be so securely attached that they could survive a 90-degree bend in any direction when a load was applied to the unattached end of the coil. The springs had to be relatively straight, i.e., perpendicular to the base. If the springs were securely attached to the base, the expensive cast bosses on the transmission which formerly had held the springs in the clutch could be eliminated, thereby effecting a cost saving. Thus, ideally, the attachment not only had to be secure enough to keep the spring in place until assembled, but also had to last the life of the transmission. [Footnote omitted.]

Because the Dooley disclosures did not solve GM's various objectives, the Commission considered them to be nonfunctional concepts and no more than the "format" of the desired spring assembly. Accordingly, in the Commission's view, the Doley disclosures were not "prior art." The Commission did, however, consider them to be "indicative of the level of skill in the art."

GM argues that if the Dooley disclosures had been treated as "prior art" within the meaning of the statute,[11] the Commission could not have ignored them in reaching its conclusion on the issue of obviousness, nor supported its decision by reliance on the presumption of the patent's validity. Both contentions must fail.

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[11] In contrast to the question of what the prior art teaches (i.e., its scope and content), what constitutes prior art within the meaning of the statute is a question of law. *In re Schoenewaldt*, 52 CCPA 1258, 343 F.2d 1000, 145 USPQ 289 (1965).

Contrary to GM's interpretation of the effect of the statutory presumption of validity, 35 USC 282, it is well settled in this court that "a patent shall be presumed valid and the burden of persuasion is and always will remain on the party asserting invalidity . . ." *Stevenson* v. *USITC*, supra at 115, 612 F.2d at 551, 204 USPQ at 281, citing *Solder Removal Co.* v. *USITC*, 65 CCPA 120, 582 F.2d 628, 199 USPQ 129 (1978).

Moreover, not only did the Commission in fact consider the substance of these disclosures in reaching its conclusions, but also found them not to be as pertinent as the Schaad patent, a view we share. The Schaad patent teaches a number of the essential elements of the claimed invention, whereas the Dooley disclosures conveyed no more than "the way the thing should look," which the Commission deemed, in any event, would have been obvious to those skilled in the art.

Denominating the Dooley disclosures as "prior art" would not change these conclusions.

Obviousness

The ALJ concluded that Dulude and Winbigler's invention resided in securely attaching a plurality of springs by staking no more than one dead turn. Because nothing in the prior art suggested this could be done, the ALJ found the *invention* "not obvious" but found the *claims* to be overly broad, because the claims were not limited to staking as the means for securing the springs to the plate. In the ALJ's view:

> . . . the claims are broader than the invention. A claim can distinctly claim an invention broader than the specific embodiment of the invention disclosed in the specification, but it cannot be broader than what the applicants invented. In the instant case, the claims are so broad that any minor differences between the claims and the prior art would have been obvious to a hypothetical person

> with ordinary skill in the pertinent art at the time the invention was made, because the claims merely combine well known elements of the prior art.
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> ...In the instant case, no synergistic effect is claimed. The combination of known elements covered by the broad claims of the '708 patent would have been obvious to one with ordinary skill in the art.

The Commission rejected this "overbreadth" analysis concluding that the claims are expressly limited to only one turn and to being secured by the claimed protuberances. This pair of limitations is not taught or suggested by the prior art. Therefore, we agree with the Commission that "what was necessary to construct a *functional* version of the needed format [spring assembly] would not have been obvious to one of ordinary skill" (emphasis in original).

Thus, because the Commission looked for specific language in the claims setting forth structural limitations, the Commission can not be said to have endorsed claims to vague "end result functional features" which would be disapproved under GM's interpretation of *Hotchkiss* v. *Greenwood*, 52 U.S. (11 How.) 248 (1850).

Incongruously, GM endorses the ALJ's position that since no synergistic effect (i.e., end result) is claimed, the subject spring assembly must have been obvious. Under this standard, which we reject, one would focus solely on the product created rather than on the obviousness or nonobviousness of its creation, as required under § 103.

In view of the foregoing, we agree with the Commission that the claims are not overbroad and that the failure of the prior art to reflect an appreciation that a secure attachment

can be achieved with no more than one turn leads to the conclusion that the claimed spring assembly of the '708 patent would not have been obvious.[12]

Best Mode

GM asserts that both the '708 and '287 patents are invalid under § 112 because they do not disclose a "spring leaning" problem and its solution, said to be part of the inventors' best mode of practicing the invention which, as claimed, requires springs "projecting in substantial parallelism."

It is correct that Dulude and Winbigler encountered a problem with springs leaning in various directions after being secured by their staking method. However, after the shape of the assembly punch, the shape of the extrusion, and other disclosed variables were optimized to result in a secure attachment of a portion of only one turn, Winbigler determined that the lean of the springs was "in a predictable direction relative to the cutoff of the end turn, or relative to their angular orientation at the time they were attached to the stamping." The evidence shows that once the lean was found to be predictable, it was readily corrected with a minor adjustment to the coiler machine.

GM contends that the leaning *problem* was not obvious to one of skill in the art and failure to at least disclose the problem known to exist, no matter how easily it might be solved, constitutes a failure to disclose one's best mode of practicing the invention. However, the evidence introduced by GM does not

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[12] We find it unnecessary to consider appellant's challenges to the statements in appellee's brief with respect to the probativeness of appellee's evidence of commercial success, prior failures by others and the like. GM does not challenge the weight which the Commission gave to the evidence. Indeed, GM states that the Commission "wisely gave" the events "the matter-of-fact treatment they deserve."

"tend to show that the *quality* of [the disclosures] is so poor as to effectively result in [accidental or intentional] concealment [of the best mode]." *In re Sherwood,* 613 F.2d 809, 816, 204 USPQ 537, 544 (CCPA 1980), *cert. denied,* 450 U.S. 994 (1981). There is no evidence that the spring leaning problem was intentionally left out of the patent disclosures and none to counter Winbigler's testimony that, if such lean occurs, one of ordinary skill in the art would easily recognize that it is predictable and would know how to correct it. Moreover, the Commission determined that lean is not a necessary consequence of practicing the invention, relying on the ALJ's finding that Wallbank's infringing process did not encounter any spring leaning problem. GM has not shown any error in this finding.

Finally, we do not agree with GM's argument that the Commission applied one standard of level of skill in the art when considering § 103, and another under § 112. It does not follow that if one of skill in the art could correct any spring leaning problem, the invention as a whole must have been obvious.

Conclusion

The final determinations of the Commission are *affirmed.*

INTERNATIONAL TRADE COMMISSION ACTION AND ORDER
AUGUST 19, 1981

UNITED STATES INTERNATIONAL
TRADE COMMISSION
Washington, D.C. 20436

In the Matter of	)
CERTAIN SPRING ASSEMBLIES	)
AND COMPONENTS THEREOF, AND	)
METHODS FOR THEIR MANUFACTURE	)

Investigation
337-TA-88

COMMISSION ACTION AND ORDER

Introduction

The United States International Trade Commission has concluded its investigation under section 337 of the Tariff act of 1930 (1930 U.S.C. § 1337) of alleged unfair methods of competition and unfair acts in the unauthorized importation into the United States of certain spring assemblies and components thereof or in their sale by the owner, importer, consignee, or agent of either, the alleged effect or tendency of which is to destroy or substantially injure an industry, effi-

ciently and economically operated, in the United States. The Commission's investigation concerned allegations that spring assemblies imported or sold by respondents P. J. Wallbank Manufacturing Co., Ltd., General Motors Corp., and Ford Motor Corp. are covered by certain claims of U.S. Letters Patent 3,782,708 and are the product of a process covered by U.S. Letters Patent 3,866,287. Both patents are owned by complainant Kuhlman Corp.

This Action and Order provides for the final disposition of investigation No. 337-TA-88 by the Commission. It is based upon the Commission's unanimous determination, made in public session at the Commission meeting of July 14, 1981, that there is a violation of section 337.

Action

Having reviewed the record and the recommended determination of the Administrative Law Judge in investigation No. 337-TA-88, the Commission, on July 14, 1981, determined that—

1. There is a violation of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the importation and sale of certain spring assemblies which infringe U.S. Letters Patent 3,782,708 and which are the product of a process that, if practiced in the United States, would infringe U.S. Letters Patent 3,866,287, the effect or tendency of which is to substantially injure an industry, efficiently and economically operated, in the United States;

2. The appropriate remedy for such violation of section 337 is an exclusion order, pursuant to subsection (d) of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337(d)), preventing the importation of spring assemblies and components thereof which infringe claims 1, 2, 7, 8, 9, 10, or 11 of U.S. Letters Patent 3,782,708 or which are the product of a process that, if practiced in the United States, would infringe claims 1, 3, 6, 7, or 31 of U.S. Letters Patent 3,866,287.

3. The public interest factors enumerated in subsection (d) of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337(d)) do not preclude the issuance of an exclusion order in this investigation; and

4. As provided in subsection (g)(3) of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337(g)(3)), the appropriate bond during the period this matter is pending before the President is in the amount of 72 percent of the c.i.f. value of the imported articles.

Order

Accordingly, it is hereby ORDERED THAT—

1. Spring assemblies and components thereof that infringe claims 1, 2, 7, 8, 9, 10, or 11 of U.S. Letters Patent 3,782,708 or are the product of a process which, if practiced in the United States, would infringe claims 1, 3, 6, 7, or 31 of U.S. Letters Patent 3,866,287 are excluded from entry into the United States for the remaining terms of the patents, except where such importation is licensed by the patent owner;

2. The articles to be excluded from entry into the United States shall be entitled to entry under bond in the amount of 72 percent of the c.i.f. value of the imported articles from the day after this order is received by the President pursuant to subsection (g) of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337(g)) until such time as the President notifies the Commission that he approves or disapproves this action, but, in any event, not later than 60 days after the date of receipt;

3. Notice of this Action and Order be published in the *Federal Register;*

4. A copy of this Action and Order and of the Commission opinion in support thereof be served upon each party of record to this investigation and upon the Department of Health and Human Services, the Department of Justice, the Federal Trade Commission, and the Secretary of the Treasury; and

5. This Order supersedes the Order issued by the Commission on August 10, 1981.

6. The Commission may amend this Order in accordance with the procedure described in rule 211.57 of the Commission's Rules of Practice and Procedure (46 F.R. 17533, Mar. 18, 1981).

By order of the Commission.

/s/ Kenneth R. Mason
Secretary

Issued: August 19, 1981

OPINION, JULY 14, 1981, INTERNATIONAL TRADE COMMISSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of

CERTAIN SPRING ASSEMBLIES AND COMPONENTS THEREOF, AND METHODS FOR THEIR MANUFACTURE	Investigation 337-TA-88

COMMISSION OPINION

Procedural History[1]

Kuhlman Corporation of Troy, Michigan, (Kuhlman) filed a complaint with the Commission on June 23, 1980, alleging that P. J. Wallbank Co., Ltd. of Canada (Wallbank) had violated section 337.

The Commission voted on July 22, 1980, to institute an investigation in order to determine if there was a violation of section 337 in the unauthorized importation of certain spring assemblies and components thereof into the United States, or in their sale, because such spring assemblies are alleged to be covered by claims 1, 2, and 7-11 of U.S. Letters Patent 3,782,708 (the '708 patent) and to be made in accordance with claims 1-37 of U.S. Letters Patent 3,866,287 (the '287

[1] The following abbreviations will be used in this opinion: (1) ALJ for Administrative Law Judge, (2) R.D. for the Recommended Determination of the ALJ, (3) Tr. for transcript of the hearing before the ALJ, (4) KX for Kuhlman Exhibit, (5) WX for Wallbank exhibit, and (6) GMX for GM exhibit.

patent), the effect or tendency of which is to destroy or substantially injure an industry, efficiently and economically operated, in the United States. The Commission issued a notice of investigation on August 8, 1980,[2] naming as respondents P. J. Wallbank Co., Ltd., Ford Motor Co. (Ford) and General Motors Corp (GM). Ford entered an appearance, cooperated in discovery, and filed submissions relating to the public interest, but did not otherwise participate in the investigation.

The evidentiary hearing before the ALJ (Judge Saxon) was held from February 2 to February 27, 1980. Findings of fact, conclusions of law, and posthearing briefs were filed by all active participants in the hearing.[3] Judge Saxon filed her recommended determination with the Commission on April 27, 1980, finding a violation of section 337 by virtue of the infringement of the '287 patent only.[4] All active parties filed exceptions to the recommended determination and briefs with the Commission.

The hearing before the Commission was held on Wednesday, June 10, 1981, notice of which was published in the *Federal Register* on May 13, 1981. 46 F.R. 26590. Representatives of Kuhlman, GM, and Wallbank, as well as the Commission investigative attorney, presented oral argument to the Commission on the issues of the violation of section 337, the appropriate remedy, bonding and the public interest. Ford submitted a statement on the issue of the public interest, but chose not to make an oral presentation at the Commission hearing. Kuhlman, GM, Wallbank, and the Commission investigative attorney all submitted posthearing briefs and

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[2] 46 F.R. 7106.

[3] Kuhlman Corp., General Motors Corp., P. J. Wallbank Co., Ltd., and the Commission investigative attorney.

[4] The ALJ found the '708 (product) patent invalid.

responses to specific questions of the Commissioners. Ford filed only a response to a request from one Commissioner regarding the level of spring assembly inventory that Ford is currently maintaining. No government agency filed submissions or entries of appearance.

The Canadian Government submitted two diplomatic notes to the Deputy Assistant Secretary of State for Trade and Commercial Affairs, one on February 19, 1981, and one on June 4, 1981, in response to the ALJ's recommended determination. Canada expressed its opposition to the exclusion of only imported articles from the U.S. market, alleging that such action would be in violation of the "national treatment" provisions of article III of the General Agreement on Tariffs and Trade (GATT). Canada also expressed concern over the treatement of the substantial injury issue in the R.D.

I. FACTUAL SUMMARY[5]

The investigation concerns spring assemblies used exclusively in certain automatic transmissions of GM and Ford automobiles. The assembly consists of an annular steel plate to which a number of compression coil springs are attached. The springs are substantially perpendicular to the plate, substantially parallel to each other, of substantially the same height, and evenly spaced around the ring-shaped plate.

In 1969, GM used helical springs in the clutch assemblies of some of its transmissions. The springs for some clutches were assembled by hand; others were assembled by automatic spring feeders before they were secured in place in the clutch. Tr. 596-602. Assembly of the springs by hand often resulted

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[5] For a more detailed discussion of the factual background of this case, see the R.D. of the ALJ at 6-13.

in the tangling of many of the springs. After the springs were assembled loosely on a base, they were carried on a jiggling conveyor, sometimes falling out of position before they were finally secured in place in the clutch. KX-129, p. 9-11. Manual assembly of the springs required high labor costs to assure that all the springs in each assembly reached the clutch. Moreover, a large number of tangled springs were lost as scrap. R.D. at 7. Difficulties were also experienced with the automatic spring feeders. Tr. 600-601. Several GM employees suggested that the springs be preassembled on a base, so that they would not become tangled and would remain in position until they were secured in the clutch assembly. R.D. at 7.

In late 1970, Mr. Kruse, an engineer at GM's Chevrolet-Parma plant, built a model spring assembly by securing 17 springs to a base with epoxy. The spring assembly was put in an oven to harden the epoxy. This model (the Kruse epoxy model) was intended as a concept model to show what parts were to be assembled. The epoxy which was used had not been tested or used for functional use in a transmission. Tr. 2378-2384.

On February 3, 1971, Mr. Kruse submitted a "methods improvements proposal" to attach springs to a spring retainer. GM Ex. 1. He suggested three possible methods of attaching the springs to the base: (1) gluing, (2) brazing,[6] or (3) "making projections on retainer which capture spring." KX-92. GM devoted some time and effort to the development of spring assemblies using the above methods. However, it ultimately decided to present the problem and the desired end

[6] Brazing involves soldering, or putting an alloy between the spring and the base and then heating the alloy to form a seal. Welding involves heating the point of contact between the spring and the base until they both melt enough to form a seal.

product to its spring suppliers. It is not clear whether GM abandoned any serious efforts to develop the spring assemblies or whether it decided that it would be more economical to let a supplier develop and supply them.

In 1971, Mr. Dooley, a buyer at GM's Chevrolet-Parma plant, showed the Kruse epoxy model to various spring suppliers. KX-90, p. 40. Mr. Dooley met with Mr. Dulude of Kuhlman on February 24, 1971, for approximately 20 to 30 minutes. Tr. 3593. During the conversation three possible ways to make the spring assembly were discussed: (1) welding, (2) adhesive bonding, and (3) snapping the spring over a protuberance on the base. It is not clear whether Mr. Dooley indicated that these methods of attachment were tried by GM but did not work or whether he suggested them as ways that could be pursued. It is unlikely that Mr. Dooley told Mr. Dulude that the three suggested methods would work, because he was aware that GM had considered them and had not produced a usable spring assembly. KX-90, p. 29-42. In addition, the Kruse epoxy model was shown to Mr. Dulude.

Under the GM specifications, the springs had to be so securely attached that they could survive a 90-degree bend in any direction when a load was applied to the unattached end of the coil. The springs had to be relatively straight, i.e., perpendicular to the base. If the springs were securely attached to the base, the expensive cast bosses [7] on the transmission which formerly had held the springs in the clutch could be eliminated, thereby effecting a cost saving. Tr. 2372-2374. Thus, ideally, the attachment not only had to be secure

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[7] Bosses are nubs or protuberances which were formerly used to keep the individual springs in place once they were placed in the transmission. The subject spring assemblies dispensed with the need for the bosses because the springs are securely attached to the base. See p. 7, supra.

enough to keep the spring in place until assembled, but also had to last the life of the transmission.

Mr. Dulude decided that he would try to form protuberances with holes in them on the steel stamping on which the springs would be placed, and to put a punch through the center of the protuberances so that they would be expanded to stake or grip the springs. After returning from his meeting with Mr. Dooley, Mr. Dulude discussed this idea with Mr. Winbigler, an engineer at Quality Spring, a division of the Kuhlman Corporation.[8] Mr. Winbigler immediately went to work on the project, devoting substantially all of his time to it.

A few hand-made prototypes were made within approximately two weeks. However, it took several months for Mr. Dulude and Mr. Winbigler to develop a process for mass producing the spring assemblies. Quality Spring began selling the assemblies to GM in 1971. The initial patent application was filed on December 1, 1971. The process is taught in the '287 patent and the product made by this process is described in the '708 patent. The '708 product patent issued on January 1, 1974, and the '287 process patent issued February 18, 1975.

Soon after the product was accepted for use at GM, GM advised Quality Spring that, pursuant to their multiple sourcing policy, a second source for these spring assemblies would be required. Quality Spring sent a letter dated June 12, 1972, to Buick Motor Division of GM (GM Ex. 51) in which Quality Spring stated that it would give Buick a free license under any patents it obtained on the spring assembly as long as Quality Spring supplied a minimum of two-thirds of the spring assemblies purchased by Buick. On July 21, 1972, this offer

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[8] Kuhlman and Quality Spring will be used interchangeably in this opinion.

was expressly rejected by GM. GM Ex. 51. Nevertheless, for approximately three years, GM purchased 100 percent of its spring assemblies for Buick's low and reverse clutch assemblies from Quality Spring. Quality Spring also received 100 percent of the business on certain spring assemblies used at Chevrolet-Parma. R.D. at 13.

Quality Spring in fact did not press its patent claims until its share of GM's purchases of spring assemblies fell substantially below two-thirds. When that occurred in 1977 (after Wallbank entered the U.S. market selling identical spring assemblies), Quality Spring began to take steps to enforce its patents, and eventually brought this section 337 action against Wallbank. Quality Spring is also suing Wallbank in Canadian and U.S. courts, and has stated that it will file infringement actions against domestic sources of its patented product.

Prior to Wallbank's entry into the market, there were four U.S. producers of transmission spring assemblies: Associated Spring, Peterson Spring, Rockford Spring,[9] and Quality Spring. Rockford Spring stopped manufacturing spring assemblies in 1979. Thus, there are now three U.S. producers of the spring assemblies, plus one Canadian producer, Wallbank. The spring assemblies produced by Associated Spring and Peterson Spring are almost indistinguishable from those manufactured by Quality Spring.

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[9] Rockford produced a welded spring assembly, which it developed three to four years after Quality Spring's invention. Rockford's spring assembly never gained a large share of the market.

II. JURISDICTION

The Agreement Concerning Automotive Products Between the Government of the United States of America and the Government of Canada (the Autopact), and the ensuing Automotive Products Trade Act of 1965 (APTA) do not deprive the Commission of section 337 jurisdiction in this case. Wallbank argued that the two instruments, in effect, make Canadian automotive products manufacturers part of the U.S. industry; thus, the spring assemblies are not "imported" for purposes of section 337. Wallbank Posthearing Brief at 3-6. The Commission action in this case does not result in unequal treatment of a Canadian corporation vis-a-vis U.S. corporations. We find that section 337 jurisdiction properly lies in this case.

The Autopact deals specifically with the reduction of tariffs. It mentions the reduction of other barriers to trade in the sense of a future goal. Moreover, the Autopact deals with the liberalization of *fair* trade practices, not unfair trade practices. One of the objectives of the treaty is "the liberalization of United States and Canadian automotive trade in respect to tariff barriers and other impediments with a view to enabling the industries of both countries to participate *on a fair and equitable basis* in the expanding total market of the two countries . . . ." (Emphasis added.) Article I of the Autopact.

Wallbank contends that since APTA does not specifically exclude section 337 from the purview of the Autopact, section 337 proceedings cannot be brought against Canadian corporations selling auto parts in the United States because it would be a "factor tending to impede" automotive trade between Canada and the United States.

Although section 2033 of APTA, which specifically exempts the antidumping laws and the antitrust laws from the

Autopact, does not specifically mention section 337 proceedings, the legislative history of section 2033 states:

> The agreement permits either government to take action consistent with its obligation under Part II of the General Agreement on Tariffs and Trade (GATT)(art. III). Part II of the GATT *includes* provisions permitting contracting parties to take antidumping measures and escape clause actions. *In this connection, it should be made clear that nothing in this agreement nor in this enabling legislation acts to dull the operation of our remedial statutes*. Report of the Committee on Finance, S. Rep. No. 782, 89th Cong., 1st Sess. 7 (1965). (Emphasis added.)

The use of the word "includes" in referring to Part II of the GATT plainly indicates that "antidumping measures and escape clause actions" was not meant to be an exhaustive list of the measures permissible under either Part II of the GATT or the legislation. The last sentence quoted was clearly intended to cover a broader class of actions than those specifically referred to in the legislative history. Use of the phrase "[i]n this connection" indicates that the sentence is not limited to the specifics of the surrounding discussion. Moreover, the use of the term "remedial statutes" clearly addresses a broader category of statutes than merely the antitrust laws, the escape clause and the antidumping laws. The plain import of the sentence is that the Congress did not interpret the Autopact as affecting or intend the enabling legislation to affect U.S. remedial statutes involving trade between the two countries. Section 337, addressing only unfair trade practices, is such a statute.

Wallbank's claim of status as a U.S. corporation is somewhat disingenuous in light of the fact that it sucessfully avoided a complete inspection of its factory in Canada on the grounds that the Commission had no authority to require that

a Canadian company allow a U.S. competitor to inspect its production facilities. R.D. at 5.

Section 337 does not discriminate against foreign corporations by virtue of their foreign status. It applies to foreign and domestic corporations alike. Section 337 gives the Commission jurisdiction over products imported from a foreign country, even if they are manufactured and/or imported by a U.S. corporation. The Commission's jurisdiction lies in unfair acts occurring in connection with the importation of goods into the United States or their sale, and its extends to all persons engaged in such unfair acts. A U.S. corporation that is not engaged in the importation or sale of articles can be sued for the same unfair trade practice under an analagous cause of action, patent infringement, in a U.S. District Court. Moreover, in order to obtain relief in the district court, a plaintiff must prove only one of the elements of a section 337 cause of action, the unfair act of patent infringement. A district court plaintiff need not prove the other elements of a section 337 violation, nor demonstrate that the remedy is in the public interest.

III. VALIDITY OF THE '708 PATENT

Respondents contend that the claims of the '708 patent in issue are invalid because they would have been obvious to one of ordinary skill in the relevant art at the time of the claimed invention. Respondents further allege that the '708 patent is invalid for failure to teach the "best mode" for use of the claimed invention.

A. Obviousness

Section 103, 35 U.S.C. § 103 of the U.S. patent statute, states that—

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in

> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a pe.son having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The Supreme Court has set forth the appropriate analysis to determine the validity of a patent under section 103:

> [T]he scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1965)

1. *The Scope and Content of the Prior Art*

The Schaad Patent, U.S. Letters Patent 3,122,829, is the most relevant prior art. Cited by the patent examiner in the '708 patent, it is closer to the '708 patent than any of the other alleged prior art cited in this investigation. The Schaad patent (KX-15) teaches an assembly of unground springs staked to a single metal base pan in which the upwardly turned rim portions are crimped or bent over the bottom coil of each spring. The upper end of each spring is attached to and positioned by a separator part. The Schaad assembly

was intended to be used in seats, but the method was never used.[10]

We fully agree with the ALJ's analysis of the status of the Delco Moraine products and the Delco Moraine process as prior art. R.D. at 16-17. The Delco Moraine brake cylinder return spring assembly, the Delco Moraine brake hold-down spring assembly, and the Delco Moraine valve seat and spring assembly for brake main cylinders qualify as prior art for purposes of section 103, as these products would fall under section 102(b) of the Patent Act if they met all of the elements of the claims in issue. All parties agree that art under section 102(b) can be "prior art" under section 103, and can be combined with other prior art to show obviousness.[11] The various Delco Moraine brake assemblies consist of a single spring having a sheet metal seat attached to each end.[12] For purposes of brevity, we will only discuss the Delco Moraine brake cylinder return spring assembly in analyzing the obviousness of the '708 patent, as the other Delco Moraine products are of no greater relevance to any of the elements of the patent claims in issue.

GM's Delco Moraine process does not qualify as prior art, as it was not open to the public and does not fall under an exception to the rule that information which is kept secret is not prior art under section 103. Although the Delco Moraine process does not qualify as prior art for purposes of section 103, it

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[10] For a more detailed discussion of the content of the Schaad patent, see R.D. at 18-19, which we incorporate by reference.

[11] See R.D. at 16-17 for the ALJ's analysis of the prior art status of the Delco Moraine assemblies, which we incorporate by reference.

[12] The Delco Moraine hold-down spring assembly submitted in GM Phys. Ex. H-42 had a sheet metal seat attached to only one end. For a more detailed discussion of the content of the Delco Moraine brake assemblies, see R.D. at 19, which we incorporate by reference.

is an indication of the level of skill in the art at the time of the alleged invention.

The Dooley disclosures actually involve two distinct categories of disclosures. First, Mr. Dooley showed Mr. Dulude a model (the Kruse epoxy model) of a desired end product. Second, Mr. Dooley and Mr. Dulude discussed three possible ways of making the desired end product: welding, adhesive bonding, and snapping the springs over the protuberances. Although we find, as did the ALJ, that none of these qualify as prior art, our rationale is different.[13]

The Kruse epoxy model was a nonfunctional, concept model. Its purpose was to illustrate the product that several GM employees had suggested be developed. It showed the parts that needed to be assembled as well as the assembly that was needed in order to replace the old method of assembling transmissions. The Kruse epoxy model, at the time it was shown to Mr. Dulude, represented unfulfilled desires. It was not a functional model on which GM hoped to improve. Consequently, we find that the Kruse epoxy model is not properly considered "prior art." We do find, however, as did the ALJ, that it is an indication of the level of skill of a person of ordinary skill in the pertinent art at the time of the invention.

The three methods of attachment discussed by Mr. Dooley and Mr. Dulude do not rise to the level of relevant prior art for purposes of section 103. It is not entirely clear whether the three methods were suggested by Mr. Dooley as possible ways of achieving the desired end product, or as methods that GM had tried and rejected. However, under either assumption, they do not qualify as prior art. If one assumes that they were suggested as possible ways to produce the desired article, then

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[13] See R.D. at 15-16 for the ALJ's discussion of the prior art status of the Dooley disclosures.

they would amount to no more than mere suggestions from someone with no apparent expertise in the field. On the other hand, if one assumes that Mr. Dooley was told that these were methods that GM had tried and rejected, the methods would be no more than the equivalent of prior unsuccessful experimentation. Although the three methods discussed do not qualify as prior art, they are indicative of the level of ordinary skill in the pertinent art at the time.

In sum, we find, as did the ALJ, that the relevant prior art consists of the Schaad patent and the Delco Moraine brake assemblies. The Delco Moraine process, the Dooley disclosures, and the Kruse epoxy model do not qualify as prior art, but they are indicative of the level of ordinary skill in the pertinent art at the time.

2. *The Differences Between the Claims in Issue and the Prior Art*

After determining the scope and content of the prior art, *Graham v. John Deere Co.*, supra, requires that the differences between the claims in issue and the prior art be determined.

Claims 1, 2, 7, 8, 9, 10, and 11 of the '708 patent are in issue. Claims 2, 7, 8, 9, and 10 are dependent on claim 1, and claim 11 is dependent on claim 2.

Claim 1 reads as follows:

> A spring assembly comprising a sheet metal stamping including an annular base portion and a plurality of protuberances formed integrally on said base portion and circumferentially spaced around said annular base portion and projecting in one direction therefrom, and a plurality of compression coil springs individually having a portion of one turn secured by each of said protuberances to said annular base portion, said one turn being unground and of uniform cross-sectional material, all other turns of each of said springs being spaced from said

> base portion, all portions of said springs other than said one turn lying in their free unconstrained positions, said springs projecting in substantial parallelism with one another from said base portion in said one direction.

All the elements in claim 1, except the format of the spring assembly needed by GM, and the requirement that all turns of the spring other than a portion of the lower turn lie in their free, unconstrained positions, are found in the prior art.

Schaad teaches "a spring assembly comprising a sheet metal stamping" and "a plurality of protuberances formed integrally on said base portion." KX-15. Schaad does not teach an "annular base portion" or protuberances "circumferentially spaced" around it; however, the arrangement of an annular base with circumferentially spaced springs was known to those skilled in the art at the time, and was disclosed by Mr. Dooley to Mr. Dulude.[14] If the idea of circumferentially spaced protuberances was not also disclosed, it would have been obvious to one skilled in the art at the time.

The Schaad protuberances project "in one direction" from the base. The Schaad patent teaches a "plurality of compression coil springs."

It is not clear whether each Schaad spring "individually" has "a *portion* of one turn secured by" (emphasis added) a protuberance or whether the whole first turn is secured to the base. The Schaad patent teaches a secure attachment by staking. "Secured" in claim 1 is read as requiring a firm attachment because of the dictionary definition of this word. In the Delco Moraine brake cylinder return spring assembly, only a portion of one turn is attached by a protuberance to the base. However, the Delco Moraine assembly is not firmly

[14] The Kruse epoxy model.

"secured" by the four-point staking (and need not be for the purposes for which it is used).

Schaad's bottom turn is unground, although the patent examiner may not have known this. Tr. 925. Delco Moraine's bottom turn also is "unground and of uniform cross-sectional material." "All other turns" of each Delco Moraine spring area are "spaced from" the "base portion." This is not true of the Schaad assembly.

Claim 1 calls for all turns of the spring other than that portion of the first turn secured by a protuberance to lie "in their free unconstrained positions, said springs projecting in substantial parallelism with one another from said base portion in one direction." This language indicates that the springs must be unconstrained and relatively parallel to one another, but it does not necessarily require that the springs be perpendicular to the base.[15]

None of the prior art contains the requirement that all turns of each spring other than the one turn secured to the base be free and unconstrained while projecting in substantial parallelism with the other springs. The springs in a completed Schaad assembly are "in substantial parallelism with one another" from the base in "one direction." However, this is only achieved by placing a "separator pan" (a constraint) on top of the springs. The separator pan contains bosses[16] extending downward to keep the springs apart and parallel.

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[15] Claim 8 of the '708 patent, dependent on claim 1, requires that the springs be perpendicular to the base.

[16] These bosses are characteristically and functionally similar to the bosses used in GM's old method of transmission assembly to keep the springs separated and in place. The bosses used by GM are now obsolete, as they were found to be no longer necessary once GM started using Kuhlman's spring assembly.

The springs in the Schaad assembly do not stand "substantially parallel" in the absence of the separator pan. Unlike the '708 patent, the springs in the Schaad patent do not stand parallel by virtue only of their attachment to the base.

The Delco Moraine spring assemblies meet neither the requirement that the springs be free and unconstrained nor that the springs be substantially parallel to one another. The Delco Moraine springs are staked (constrained) to bases on both ends, and the assemblies sometimes lean severely. Moreover, each Delco Moraine spring assembly is a separate spring (not "a plurality of compression coil springs"). Thus, there is only one spring in each assembly, making the concept of parallelism between springs in one assembly inapposite.

The Kruse epoxy model[17] showed parallel springs in their free, unconstrained position, but more than one turn of each spring near the base was constrained. Furthermore, the Kruse epoxy model was not functional.

Claim 2 reads as follows:

> The combination of claim 1 in which each of said protuberances include a lip portion and in which at least a portion of the lower turn of the one of said springs individual thereto is trapped between said lip portion of the protuberance and said annular base portion.

Claim 2 adds the limitation that at least a portion of the lower turn of the springs is trapped between the lip of the protuberance and the base.

The method of securement used in the Schaad patent involves trapping at least a portion of the lower turn of each spring between the lip portion of the protuberance and the

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[17] Evidence of skill in the art.

base portion. The Schaad patent meets the element of this claim despite the fact that the lower turns of the springs are coiled, not helical; the formation of the springs is not essential to the elements of this claim. The Delco Moraine spring assembly also discloses trapping at least a portion of the lower turn of each spring between the lip of the protuberance and the base. (It should be noted, however, that four protuberances of the type used in the Delco Moraine spring assembly are needed to secure one spring to the base.)

The only new limitations found in claim 2, beyond those in claim 1, are found individually in the prior art.

Claim 7 reads as follows:

> The combination of claim 1 in which a portion of said one turn of each of said springs is also spaced from said base portion.

Claim 7 adds to claim 1 the limitation that a portion of the lower turn of each spring is also spaced from the base portion. This is not found in Schaad, where about the lower 1½ turns are coiled. However, the Delco Moraine assembly shows a staking of a helical spring where part of the lower turn is spaced from the base. The only new limitation in claim 7 is found in the prior art.

Claim 8 reads as follows:

> The combination of claim 1 in which the axis of said all other turns of each of said springs is substantially perpendicular to said base portion.

Claim 8 adds the limitation that the springs will stand substantially straight. This makes more specific the limitation already found in claim 1 where the springs are required to be substantially parallel to one another in one direction from the base. Under claim 1, they could all lean in the same direction.

Under claim 8 they would have to be substantially perpendicular to the base. In Schaad, all the springs are straight or substantially perpendicular to the base. In the Delco Moraine spring assemblies, they are not.

The only new limitation found in claim 8 is found in the prior art.

Claim 9 reads as follows:

> The combination of claim 1 in which each of said springs is secured to said annular base portion by permanent distortion of said sheet metal protuberances.

Claim 9 adds to claim 1 the limitation that the springs are secured to the base by permanent distortion of the sheet metal protuberances. Claim 9 would eliminate some methods of attachment otherwise covered by claim 1.

Schaad and the Delco Moraine spring assembly both teach a permanent distortion of the sheet metal protuberances by staking.

The only new limitation found in claim 9 is found in the prior art.

Claim 10 reads as follows:

> The combination of claim 1 in which said all other turns of each of said springs including the turn most remote from said one turn are unground and of uniform cross-sectional material.

Claim 10 adds to claim 1 the limitation that all "other" turns of each spring, including the top turn, be unground and of uniform cross-sectional material. In the Delco Moraine spring assembly, all turns are unground and of uniform cross-sectional material. The only new limitation found in claim 10 is found in the prior art.

Claim 11 reads as follows:

The combination of claim 2 in which each said one turn is closed. Claim 11 adds the claim 2 limitation to claim 1 (trapping part of the lower turn of the spring between the lip and the base), and the further limitation that the lower turn is closed. Delco Moraine shows the lower turn closed.

The only new limitation added by claim 11 is found in the prior art.

All of the elements of the claims in issue, except the format of the needed assembly (including the requirement that the springs stand substantially parallel to one another while free and unconstrained), are found individually (but not in combination) in the prior art.

3. *Obviousness or Nonobviousness of the Subject Matter*

Finally, *Graham v. John Deere Co.*, supra, requires consideration of the question of whether the differences between the claimed invention and the prior art would have been obvious to a hypothetical person with ordinary skill in the pertinent art at the time the invention was made.

The format needed to solve GM's problem would have been obvious to one skilled in the pertinent art at the time of the invention. However, what was necessary to construct a *functional* version of the needed format would not have been obvious to one of ordinary skill.

The combination of prior art fails to teach the critical result of the invention: the secure mechanical attachment of compression springs to a metal stamping in such a way that they remain substantially parallel while free and unconstrained. Messrs. Dulude and Winbigler not only achieved the critical result, but did so using less metal to secure the springs and engaging fewer coils of the springs than had previously been

possible where a secure attachment was needed.[18] When the prior art fails to teach the critical result of an invention, even when the claimed structural changes are minor, the invention is patentable. *Saf-Gard Products, Inc., et al. v. Service Parts, Inc., et al.*, 532 F.2d 1266 (9th Cir. 1976).

As noted by the ALJ, "[a]lthough the method of attachment...was not new, the combination of prior art which worked was not predictable from the known art at that time." R.D. at 26. Secondary considerations support this conclusion. All the prior art cited against the '708 patent was known by GM, but GM did not solve the problem. No other GM supplier found a solution until long after the '708 patent application was filed in 1971, and that supplier's solution never gained the level of acceptance that the subject spring assemblies have achieved.[19] If the problem were easy to solve, or if the solution were obvious, it is reasonable to expect that it would have been solved promptly and without difficulty by GM or one of the other, larger spring suppliers.

Other secondary considerations further support the patentability of this invention.

The spring assemblies have had commercial success,[20] and the product has been imitated. The products manufactured by Wallbank, Peterson and Associated Spring are indistinguishable from Kuhlman's products. Only one supplier has pro-

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[18] This excludes the Delco Moraine assemblies, as the attachment in the Delco Moraine assemblies is not secure.

[19] Rockford Spring created a welded spring assembly in 1974. It sold it to GM for three to four years, gaining a nominal share of the market. In 1977, Rockford Spring took its welded spring assembly off the market.

[20] KX-66, Tr. 3665.

duced a successful alternative design (the Rockford welded spring assembly).

The record evidences a long-felt need at GM for the subject spring assembly. Quality Spring's assembly successfully solved several troublesome and expensive problems GM had experienced using the old method of assembly. R.D. at 30-31. Mr. Kobs, a GM engineer, testified that the production people would have bought the Quality Spring assemblies at any price, even if the cost savings had not been large. KX-129 at 26-29. GM's subsequent purchases of the product confirm this finding. The usefulness of the product was recognized by both GM and Ford.

The ALJ found that there was a patentable invention; that a combination of all the prior art failed to teach the critical result of the invention; that the combination of prior art which worked was not predictable; and that the secondary considerations supported the patentability of the product. However, she found the patent invalid. The basis for her determination was that the claims of the patent were broader than the patentable invention. She found that the spring assembly invented by Messrs. Dulude and Winbigler was a patentable product, but that the patentable invention was limited to a product where the springs were secured to the base by "staking" only. The overbreadth of the claims, according to the ALJ, lies in the method of securing the springs to the base. She found that—

> [t]he fact that Quality Spring may have been the first to invent a satisfactory means for attaching springs to a base plate does not entitle it to broad claims covering all possible means for attaching springs. *In re Ferguson*, 88 F.2d 693 (C.C.P.A. 1936).... The '708 patent claims are not limited to a spring assembly made by the particular method invented by Dulude

> and Winbigler. Alternative methods such as welding, brazing, gluing, or a friction fit (snapping springs over protuberances) could be covered by most of the claims, and the patent itself states that alternative methods were contemplated." R.D. at 26, 27.

We agree with the ALJ that the complainant is not entitled to claims covering all possible means for attaching springs to a base; however, we disagree with her analysis of the coverage of the claims.

The crucial language regarding the claimed method of securement is found in independent claim 1. It calls for the springs to be "secured *by each of said protuberances*." (Emphasis added.) This language unequivocally limits the claimed method of attachment not only to a mechanical attachment, but to a mechanical attachment effected by the claimed protuberances.

The language does cover methods of attachment beyond the preferred method of staking described in the specifications. For example, the language would arguably cover a friction fit where the springs are snapped over the claimed protuberances. However, contrary to the finding of the ALJ, the claims would not cover attachment by welding, gluing, or brazing. In gluing, the attachment is effected by the epoxy glue, not by the protuberance. The attachment in brazing is effected by an alloy that is put between the base and the spring (which is then heated to form a seal). In welding, the securement is effected by fusing the point of contact between the spring and the base, or the protuberance and the base, not by the protuberance alone. Indeed, it is arguable that the claim would not even read on a friction fit between the spring and the protuberance because it is the friction between the spring and the protuberance and not just the obstruction of the protuberance that is securing the spring to the base.

Although the claim could cover a method of attachment other than the preferred method described in the specification, that does not mean the claim is too broad. A claim can cover material not found in the preferred method in the specification as long as enough is revealed to a person with ordinary skill in the pertinent art to enable him to practice the invention. The specification for the '708 patent has satisfied that requirement for any method that could be conceivably covered by the claims in issue.

The ALJ's reading of claim 1 is unduly broad. It is true, as the ALJ notes, that the specification states that alternative methods of attachment (i.e., methods other than the preferred method of staking) are contemplated, and that brazing is mentioned in particular. However, just as the specification cannot be read to narrow an overly broad patent, *General Electric Co. v. Wabash Appliance Corp.*, 304 U.S. 364 at 374 (1938), it cannot be read to cover subject matter that is not fairly covered by the language of the claims. The language of the claims controls.

Once issued, a patent is presumed valid. 35 U.S.C. § 282. The presumption is sufficient to sustain a finding of validity until rebutted by clear and convincing evidence. *Solder Removal Co. v. U.S. International Trade Commission*, 582 F.2d 628 (C.C.P.A. 1978). Moreover, when the most pertinent prior art was considered by the patent examiner, the presumption of validity is strengthened even though less relevant prior art was not before him. *Universal Athletic Sales Co. v. American Gym, Recreational & Athletic Eqipment Corp.*, 546 F.2d 530, 540 n. 28 (3d Cir. 1976), cert. denied, 430 U.S. 984; *Ortho Pharmaceutical Corp. v. American Hospital Supply Corp.*, 534 F.2d 89, 93-94 (7th Cir. 1976); *Tapco Products Co. v. Van Mark Products Corp.*, 446 F.2d 420, 426 (6th Cir. 1971), cert. denied, 406 U.S. 948.

The Schaad patent is unquestionably the most pertinent prior art in considering the obviousness of the '708 patent. It teaches many more elements of the claim than does the Delco Moraine spring assemblies. Moreover, it deals more completely with all the essential elements of the patent than do the Delco Moraine spring assemblies. The Delco Moraine assemblies cover only one element of the claim that the Schaad patent does not cover more completely: the requirement that all turns except the portion of the turn that is attached to the base by the protuberance be "spaced from said base portion." This element is not present in the Schaad patent, but is present in the Delco Moraine spring assembly. However, the Delco Moraine attachment to the base is not a secure, functional attachment; it is attached at only four points on the base, rather than by a single circumferential attachment as in the Schaad and Dulude patents. It is an "assembly" only in the sense that it has a thin piece of metal attached to each end of a spring. It is not a plurality of springs attached to a unitary base, as in the Schaad and Dulude patents. Its purpose is to reduce the tangling of the springs to facilitate installment, rather than to keep the springs in place for the life of the product, as with the Schaad and Dulude patents. Moreover, many of the elements of the Delco Moraine assemblies teach away from the Dulude patent.

The Schaad patent was before the examiner. Its elements more closely teach the elements of the '708 patent than does any of the other prior art; yet the patent was issued. In light of the strong presumption of validity, and the clear indications of nonobviousness, we conclude that the respondents have not met their burden of proving that the '708 patent is invalid under 35 U.S.C. § 103.

B. Best Mode

Respondents contend that both patents in issue are invalid beause they fail to reveal the "best mode" as required by 35

U.S.C. § 112. This section requires, inter alia, that the inventor disclose in his application the best mode of which he was aware for practicing his invention.

Respondents note that the inventor, Mr. Winbigler, observed that after the springs had been attached to the base, they leaned in different directions. Tr. 252-60. This leaning problem rendered the spring assemblies ineffective for GM's production requirements. However, Mr. Winbigler readily perceived that each spring leaned in the same direction relative to the cutoff of the turn of that spring. Since the lean can be predicted on the basis of the cutoff point, one constructing the patented assembly need only adjust the springs to compensate for the leaning to make the springs stand parallel and perpendicular. Respondents argue that this technique was one aspect of the best mode for carrying out both the '708 and '287 patents and should therefore have been revealed.

Mr. Winbigler testified that the method of turning the springs to aline them in a parallel fashion is obvious to those with skill in the art. Tr. 575-576. Although respondents argue that the turning of the springs is more than an obvious step, they have presented no evidence to support their allegation. Furthermore, the assertion that adjustment of the springs is beyond the ability of an ordinary mechanic is not credible when viewed in the context of the respondents' general contention that the entire '708 and '287 patents would have been obvious to one skilled in the art at the time.

A patent may be invalidated for failure to reveal the best mode only where the applicant intentionally or accidently concealed the best mode. *In re Sherwood*, 613 F.2d 809, 816 (C.C.P.A. 1980). To establish concealment, the respondents must prove "that the quality of [complainant's] best mode disclosure is so poor as to effectively result in concealment." *Sherwood*, supra. However, one must bear in mind that patents are written for those skilled in the relevant art. An applicant

need not divulge every piece of information which a lay person would need to operate the invention most effectively. The best mode disclosure need not explain techniques which would be readily understood and applied by those skilled in the art.

The ALJ determined that both patents satisfied the best mode requirement for three distinct reasons: (1) the leaning problem could be readily solved by one skilled in the art; (2) leaning is not a problem in some embodiments of the inventions in issue; and (3) there is no evidence that Mr. Winbigler acted in bad faith to conceal the best mode. We concur with the ALJ's conclusion that the best mode requirement is satisfied.

IV. INFRINGEMENT OF THE '708 PATENT

The parties have stipulated that claims 1, 2, 8, 9, 10, and 11 of the '708 patent are readable on the spring assemblies in issue which are made by Wallbank. The parties did not stipulate that claim 7 of the '708 patent is readable on Wallbank's spring assemblies. We find, as did the ALJ, that the Wallbank spring assemblies also infringe claim 7.[21]

* * *

(The balance of the Commission Opinion, part of which is confidential, including the additional views of Commissioner Stern, does not pertain to the '708 patent.)

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of
CERTAIN SPRING ASSEMBLIES AND COMPONENTS THEREOF, AND METHODS OF THEIR MANUFACTURE — Investigation 337-TA-88

RECOMMENDED DETERMINATION

May 4, 1981

Procedural History

[p. 1]

On June 23, 1980, complainant Kuhlman Corp. filed a complaint with the United States International Trade Commission alleging that P. J. Wallbank Manufacturing Co., Ltd., a Canadian corporation, had violated Section 337 of the Tariff Act of 1930, as amended (19 U.S.C. 1337).

The Commission issued a notice of investigation which was published in the Federal Register on August 8, 1980 (46 F.R. 7106). The investigation was to determine whether there is a violation of Section 337 in the unauthorized importation of certain spring assemblies and components thereof into the United States, or in their sale,

> "because such spring assemblies are alleged to be covered by claims 1, 2, and 7-11 of U.S. Letters Patent 2,782,708, and to be made in accordance with claims 1-37 of U.S. Letters Patent 3,866,287, the effect or tendency of which is to destroy or substantially injure an industry, efficiently and economically operated in the United States."

The Commission named Ford Motor Co. and General Motors Corp. as respondents, as well as Wallbank. Kuhlman's request for a TEO hearing was withdrawn.

After the hearing commenced, and one of Kuhlman's witnesses had testified, General Motors filed a motion to amend the pleadings to conform to the evidence under Rule 210.22. This motion was granted.

The hearing was concluded on February 27, 1981. Although Ford entered an appearance, and cooperated in discovery, Ford did not actively participate in the hearing. Briefs have been filed by all active parties and the case is ready for a recommended determination.

ISSUES

[p. 2]

The only issue before me is whether an unfair method or unfair act exists under Section 337 of the Tariff Act of 1930, as amended. Under Rule 210.14 the Commission has reserved to itself all consideration of the public interest factors and the remedy. Evidence relating solely to these subjects was excluded from the hearing.

The parties have stipulated that:

> 1. Claims 1, 2, 8, 9, 10, and 11 of the '708 patent are readable on products manufactured by Wallbank of the type involved in the present action and depicted by Kuhlman's Physical Exhibits C, E, G, I, K, M, O, Q, S, U, Y, Z, AA, NN, and OO.
>
> 2. Products of the type referred to and listed in the paragraph above (except Kuhlman Physical Ex. M) are manufactured by Wallbank and imported into the United States for use by either General Motors or Ford.

3. For the purposes of this action Kuhlman is only asserting claims 1, 2, 7, 8, 9, 10, and 11 of its product patent (the '708 patent) and claims 1, 2, 7, 29, and 31 of its method patent (the '287 patent). All other claims are hereby stipulated out of this action and will not be included in any order entered in this action. (Stipulations 3, 4, and 5).

Within the broad issue of whether an unfair practice exists, the remaining specific issues to be discussed herein are:

(1) whether the Commission has jurisdiction over Wallbank,

(2) whether the '708 and '287 patents are valid,

(3) whether the claims in these patents are infringed, if the patents are valid,

(4) whether the patents are unenforceable due to

(a) fraud on the patent office

(b) antitrust violations

(c) estoppel because of an unreasonable delay by Kuhlman in enforcing the patent, [p. 3]

(d) complainant is not practicing the invention,

(5) how the pertinent domestic industry should be defined,

(6) whether that industry is efficiently and economically operated, and

(7) whether any unfair act by Wallbank or General Motors or Ford has the effect or tendency to destroy or to injure substantially the domestic industry.

JURISDICTION

The complaint in this case seeks an exclusion order or "any other relief which the Commission should determine is necessary." Since an order to cease and desist was not sought, no finding regarding in personam jurisdiction is made. The Commission, however, has the power to issue an order to cease and desist even if one is not specifically sought by a complainant or the staff.

The Commission has in rem jurisdiction over the subject matter of this case which would support an exclusion order, if the Commission decides to issue one, because the notice of investigation covers an alleged unfair act in connection with the importation of spring assemblies from Canada, and resulting injury to a domestic industry.

Respondent Wallbank argues that the Autopact (a treaty entitled "Agreement Concerning Automotive Products Between the Government of the United States of America and the Government of Canada" and the "Automotive Products Trade Act of 1965," Wallbank Ex. 15) had the effect of eliminating all barriers to trade in the United States and Canadian automotive market.

Under Article I of the 1965 agreement between the United States and Canada, one of the objectives of the agreement was: [p. 4]

> (b) The liberalization of United States and Canadian automotive trade in respect of tariff barriers and other factors tending to impede it, with a view to enabling the industries of both countries to participate on a fair and equitable basis in the expanding total market of the two countries, . . . Wallbank Ex. 15, p. 3689.

> Section 2033 of the enabling legislation provides that:
>
> Nothing contained in this chapter shall be construed to affect or modify the provisions of part II of subtitle IV of chapter 4 of this title, or any of the antitrust laws as designated in section 12 of Title 15. 19 U.S.C.A. 2033.

Section 2033 provides that the Anti-Dumping Act and the antitrust laws will not be affected by the Autopact. Because Section 337 was not included in Section 2033 as an exception Wallbank argues that Section 337 proceedings cannot be brought against Canadian coporations selling auto parts in the United States, since Section 337 proceedings would be a "factor tending to impede" automotive trade between Canada and the United States.

Although Section 337 was not mentioned in Section 2033, Article I stresses the reduction of trade barriers to enable the industries of both countries to participate *on a fair and equitable basis*. If no Section 337 proceeding could be brought, complainant would be able to bring an action in a district court in the United States against Wallbank for infringement of the product patent, since Wallbank's product is used in the United States, but it is doubtful that a district court would have jurisdiction if complainant sued Wallbank for infringement of the process patent, because the process is used only in Canada. Under Section 1337a, importing a product produced in a foreign country under a process patented in the United States is an unfair act only for the purposes of Section 337. The Autopact encouraged automotive trade on a fair and equitable basis, and was not intended to deprive either Canadian or U.S. corporations of a right to sue one another for unfair practices. [p. 5]

Wallbank refused to allow a complete inspection of its factory in Canada during discovery, successfully arguing that the

Commission's authority did not extend to requiring a Canadian company to allow a U.S. competitor to inspect its factory, even under a protective order. It is inconsistent for Wallbank to claim immunity from discovery because it is a Canadian corporation, while arguing that it should be given immunity from Section 337 jurisdiction under the Autopact because it should be treated as if it were a U.S. corporation. The two U.S. corporations named respondents under Section 337 in this case were subject to full discovery.

The Commission's action in this case does not result in unequal treatment for a Canadian corporation as opposed to U.S. corporations. Although a U.S. manufacturer which does not import or use imported products cannot be charged under Section 337, a U.S. corporation could be sued in a U.S. district court for similar unfair practices in the United States. Besides complainant, there are now two U.S. manufacturers of the spring assemblies in issue. Complainant intends to bring infringement actions in district court against these two companies if patent infringement by Wallbank is found by the Commission. As a Canadian corporation exporting products to the United States, Wallbank is not in a worse position under Section 337 than its U.S. competitors would be in district court. Under Section 337 it is necessary to prove that Wallbank infringed a patent, and in addition that the effect of this unfair practice is to cause a tendency to injure the domestic industry. If complainant sues a corporation in district court for infringement of a patent, it need not prove that infringement had a tendency to injure the domestic industry. [p.6]

In any event, the Commission has in rem jurisdiction over Wallbank's imported products. Section 337 would give the Commission jurisdiction over products imported from Canada even if they were manufactured by a U. S. corporation. Section 337 does not discriminate against foreign corporations. The

Commission's jurisdiction is limited to unfair acts occurring in connection with imported products, and persons engaged in such unfair acts. Since the importation of the products in issue has not been denied, the Commission has jurisdiction in this case.

SUMMARY OF THE FACTS

Quality Spring Products is a division of Kuhlman Corporation, the complainant. (Stipulation No. 1). Kuhlman owns by assignment all rights in U.S. Patent No. 3,782,708, issued January 1, 1974, a product patent entitled "Spring Assembly and Methods and Machines for the Manufacture Thereof", and in U.S. Patent No. 3,866,287, issued February 18, 1975, a process patent entitled "Methods for the Manufacture of Spring Assemblies." (Stipulation No. 2). Complainant usually will be referred to as Quality Spring.

Quality Spring and Wallbank (the Canadian respondent) manufacture virtually identical spring assemblies. Wallbank's spring assemblies are imported by General Motors and to a lesser extent by Ford for use in certain transmissions. Almost indistinguishable spring assemblies are also manufactured by at least two other U.S. companies.

The product in issue under the '708 patent is an annular steel stamping to which a number of compression coil springs are attached, and the product is described as a spring assembly. The only use for these spring assemblies is in certain automatic transmissions in General Motors and Ford cars. [p. 7]

The process in issue under the '287 patent is a process to make the spring assembly by mechanical attachment of the springs to the base, using the steps set forth in the claims in the '287 patent.

In 1969, General Motors was using helical springs in the clutch assemblies of some of its transmissions. The springs for some clutches were assembled by hand. The springs for other clutches were assembled by automatic spring feeders before they were secured in place in the clutch. (Tr. 596-602). Assembly of the springs by hand resulted in tangling of many of the springs. After the springs were assembled loosely on a base, they were carried on a jiggling conveyor, and sometimes they fell out of position before they were finally secured in place in the clutch. (KX-129, p. 9-11). Manual assembly of the springs required high labor costs to assure that all the springs in each assembly reached the clutch, and a large number of tangled springs were lost as scrap. (Tr. 596-602, KX-90, p. 25-26). Difficulties were also experienced with the automatic spring feeders. (Tr. 600-601).

On December 18, 1969 a General Motors employee, Miss Emily G. Truhan, suggested that the springs be preassembled on a base, so that they would not get tangled and would remain in position until they were secured in the clutch assembly. (KX-91, Tr. 707). A number of other employees subsequently made similar suggestions. (Tr. 707-708, GM Ex. 1 and 7).

In 1970 and 1971 General Motors considered making a preassembled spring assembly by (1) welding the springs to the base, (2) gluing or brazing the springs to the base or (3) mechanical attachment of the springs to the base. (Brazing involves soldering, or putting an alloy between the spring and the base and then heating the alloy to form a seal. Welding involves heating the point of contact between spring and the base until they both melt enough to form a seal.) [p. 8]

In late 1970, Mr. Kruse, an engineer at GM's Chevrolet-Parma plant, built a model spring assembly, securing 17 springs to a base by epoxy. The spring assembly was put in an oven to harden the epoxy. This model (the Kruse model) was

intended as a concept model to show what parts were to be assembled. The record does not show whether the Kruse model used ground or unground springs (Tr. 2349), or how deep the glue was around the base of the springs. The epoxy which was used had not been tested or used in a transmission for a structural purpose. (Tr. 2378-2384). Mr. Kruse recently made two reconstructed models for this case, one using ground springs (Kuhlman Phys. Ex. KKK) and the other using unground springs (GM Phys. Ex. E).

On February 3, 1971 Mr. Kruse submitted a "methods improvements proposal" to attach springs to a spring retainer. (GM Ex. 1). He noted that the springs currently caused assembly problems, and suggested that "springs could be attached at vendor location to save labor in plant." He also noted that it might become possible to remove the bosses from the pistons, making the piston easier to produce. He suggested three possible methods of attaching the springs to the base: (1) gluing, (2) brazing, or (3) "making projections on retainer which capture spring." (KX-92).

On February 5, 1971, Mr. Bryson, a General Motors engineer, reported the results of the initial investigation. He stated that "1) welding no good, heat will ruin springs." (Welding later turned out to be feasible, but not before the '708 and '287 patents were issued). Mr. Bryson initially rejected gluing because adhesives must be compatible with transmission fluid and not dissolve. Finally, he indicated that mechanical attachment was being investigated. (KX-92). [p. 9]

Mr. Schmitz, a General Motors engineer, was asked by Mr. Bryson to try to attach 17 springs to a stamping using cylindrical protuberances to hold the springs on the stamping. On February 13, 1971, Mr. Schmitz stated that this could not be accomplished. He concluded "The idea is good but we are not able to do this on a stamping." He indicated that flanged holes about 5/16 in diameter by 1/4" high could not be made

and still hold the diameter within .005 to provide a tight fit to hold the springs. (KX-93). It is not clear whether Mr. Schmitz meant that it could not be done under any circumstances, or that it could not be done with the tools and parts he had. Mr. Schmitz did not recommend pursuing the idea with new tooling. He stated "decline suggestion."

General Motors never devoted much effort to trying to make this type of spring assembly, possibly because it was not considered to be economically feasible. (KX-93). Yet General Motors was still trying to develop its own spring assembly when it asked its spring suppliers whether they could develop a preassembled set of springs on a base. (Tr. 607-608, Tr. 708-709, Tr. 728). No spring supplier other than Quality Spring produced a workable model of a spring assembly until long after Quality Spring had produced its assembly. The only other supplier to offer a spring assembly which it had developed itself was Rockford, which made a welded spring assembly. (Tr. 792-794 and KX-94).

In February, 1971, Mr. Dooley was a buyer at General Motor's Chevrolet-Parma plant. (KX-90, p. 16). At that time, he had the Kruse glued model of the spring assembly on his desk, and he showed it to various spring suppliers. (KX-90, p. 40). This model was shown by Mr. Dooley to Mr. Burl Sellers, a Quality Spring salesman, in February, 1971. Mr. Dooley told Mr. Sellers that General Motors was having a problem with tangling springs. (Tr. 32, 33). A meeting was arranged for Mr. Dooley of General Motors and Mr. Dulude and Mr. Smith of Quality Spring. [p. 10]

This meeting took place on February 24, 1971 (KX-94), and it lasted 20 to 30 minutes. (Tr. 3593). The substance of the conversation is in dispute, since those at the meeting cannot recall the exact conversation. Mr. Dooley discussed the reason for needing the spring assembly, arising from the problems of assembling the springs by hand. Mr. Dulude later was shown the springs being assembled by hand.

During the conversation three possible ways to make the spring assembly were discussed: (1) welding, (2) adhesive bonding, and (3) snapping the spring over a protuberance on the base. It is not clear whether Mr. Dooley said that these ways were tried by General Motors and that they didn't work, or that he was suggesting them as ways that could be pursued. It is unlikely that Dooley told Dulude that these ways would work, because he was aware that General Motors had considered them and had not produced a usable spring assembly. (KX-90, p. 29-42).

Although a successful welded assembly eventually was developed in 1974 by Rockford and was used by the General Motors Buick division, at the time of the Dooley disclosure to Dulude no successful spring assembly had been produced by welding. (Tr. 800, KX-92). The '708 and '287 patents were issued long before the first welded assembly was made.

The glued model made by Mr. Kruse was shown to Mr. Dulude. Since General Motors was still trying to find someone else to develop a successful method to make the spring assembly, it is clear that the adhesive method used by Kruse was not considered by General Motors to have solved all the problems.[p. 11]

The third method of attaching the springs to the base mentioned by Dooley was snapping the spring over a protuberance, and holding the springs on the protuberance by a friction fit. Mr. Bryson had suggested a punchout in the base and snapping the spring in place over the punchout. Mr. Schmitz of the engineering department had told Mr. Bryson that it was a good idea, but that he could not do it on a stamping. (KX-93). General Motors apparently had abandoned this idea.

It is clear that what Mr. Dooley disclosed to Mr. Dulude was not an invention showing how to attach springs mechanically to a base so that they would meet the General Motors needs for a spring assembly.

The problem of attaching 17 steel springs to a small steel base was difficult because of the close stamping and spring tolerances and the small amount of metal available to grip the springs. Under the General Motors specifications, the springs had to be so securely attached that they could survive a 90 degree bend in any direction with load applied to the unattached end of the coil. The springs had to be relatively straight or perpendicular to the base. If the springs were securely attached to the base, the expensive cast nubbins or bosses on the transmission which held the springs after they were in the clutch could be eliminated, with a cost saving. (Tr. 2372-2374). Thus, the attachment had to be secure enough to last through the life of the transmission, not just to stay in place until assembled.

Mr. Dulude decided that he would try to form protuberances with holes in them on the steel stamping on which the springs would be placed, and to put a punch through the center of the protuberances so that the protuberances would be expanded to stake or grip the springs. After returning [p. 12] from his meeting with Mr. Dooley, Mr. Dulude discussed this idea with Mr. Winbigler, an engineer at Quality Spring. Mr. Winbigler immediately went to work on the project and devoted substantially all of his time to it. After about two weeks, a few hand-made prototypes were made. Several different types of staking tools were tried. On the first models, the springs had to be straightened by hand. (Tr. 261, 262).

In March, 1971, Mr. Dulude showed a prototype of the spring assembly to Mr. Dooley, who was impressed with it. (KX-90, p. 74). Mr. Dooley said that he thought that it would save General Motors the cost of making cast bosses on the piston. (KX-90, p. 75). The concept quickly was accepted for use in some GM transmissions.

Mr. Winbigler then began to develop a method of producing the spring assemblies in quantity. One of the problems

encountered was how to heat treat the springs after assembly without detrimental warping or scaling of the steel base which occurred during conventional stress-relieving in an oven. (Tr. 264-273). Previously, the springs had been stress-relieved before assembly. Mr. Dulude suggested that the springs be stress-relieved after assembly by electrical resistance heating. The question was whether each of the springs would be evenly heated through the base, and without damaging the base. If the springs were not evenly heated, the electrical resistance heating process would not work. The resistance heating process was tried and it worked.

After many months, Mr. Dulude and Mr. Winbigler developed a process for mass producing these spring assemblies, and began selling them to General Motors in 1971. The initial patent application was filed on December 1, 1971. This process is described in the '287 patent and the product made by this process is covered in the '708 patent. [p. 13]

Soon after the product was accepted for use at General Motors, General Motors advised Quality Spring that a second source for these spring assemblies would be required.

Quality Spring wrote a letter dated June 12, 1972 to Buick (GM Ex. 51) in which Quality Spring stated that it would give Buick a free license under any patents it obtained on the spring assembly as long as Quality Spring supplied a minimum of ⅔ of the spring assemblies purchased by Buick. On July 21, 1972 this offer was expressly rejected by General Motors. (GM Ex. 51). Nevertheless, for about three years, General Motors purchased 100% of its spring assemblies for Buick Motor Division's low and reverse clutch assemblies from Quality Spring, and Quality Spring also received 100% of the business on certain spring assemblies used at Chevrolet-Parma. (Tr. 1688, 626, 662, 3517, 3518, 3588).

The '708 product patent issued on January 1, 1974, and the '287 process patent issued February 18, 1975. Quality Spring in fact did not press its patent claims until its share of the General Motor's purchases of spring assemblies fell substantially below ⅔. After that occurred in 1977, when Wallbank entered the U.S. market selling identical spring assemblies, Quality Spring began to take steps looking towards enforcement of its patents, and eventually brought this section 337 action against Wallbank. Quality Spring is also suing Wallbank in Canadian and U.S. courts, and is preparing infringement action against domestic sources of this product. [p. 14]

VALIDITY OF THE '708 PATENT

1. Is the '708 patent invalid under Section 103?

Section 103 (35 U.S.C. 103) states:

> A patent may not be obtained through the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The Supreme Court in *Graham* v. *John Deere Company*, 383 U.S. 1 (1966) set forth the steps which are necessary to determine whether a patent is invalid under Section 103. First, the scope and content of the prior art are defined; second, the differences between the claims in issue and the prior art are defined; and third, the question of whether the differences between the claims and the prior art would have been obvious to

a hypothetical person with ordinary skill in the pertinent art at the time the invention was made is considered.

Before reaching the questions raised by *Graham* v. *Deere*, the question of what constitutes the prior art in this case for the purposes of Section 103 must be decided.

What constitutes the Prior Art?

Respondents allege that the "prior art" includes the Dooley disclosure to Dulude, the Schaad patent (United States Patent No. 3,122,829), the Delco Moraine brake cylinder return spring assembly and the process by which it is made at General Motors' Delco Moraine division, the Delco Moraine brake holddown spring assemblies and the Delco Moraine valve seat and spring assemblies for brake main cylinders. [p. 15]

The Dooley Disclosure

Section 102(f) provides that a person shall be entitled to a patent unless he did not himself invent the subject matter sought to be patented.

Respondents argue that Dulude and Winbigler did not invent the whole subject matter sought to be patented because Dooley disclosed to Dulude the general methods to be used in making a spring assembly. This information, according to respondents, is art falling under Section 102(f), and it can be combined with other prior art under Section 103 to show that the subject matter as a whole would be obvious to a person having ordinary skill in the art.

Most district courts appear to be undecided as to what the words "prior art" in Section 103 include. The Court of Customs and Patent Appeals (C.C.P.A.) has held that art falling under Section 102(a), 102(b), 102(e) and 102(g) can constitute prior art under Section 103. The question of whether Section 102 can be *combined* with other prior art under Section

103 is not reached with respect to the Dooley disclosure, because the C.C.P.A. has indicated that Section 102(f) is not one of the parts of Section 102 which can be considered as "prior art" under Section 103. Although the position of most other courts is not clear as to whether art falling under Section 102(f) is "prior art" for the purposes of Section 103, the C.C.P.A. opinion in *In re Bass*, 474 F.2d 1276, 177 U.S.P.Q. 178 (C.C.P.A. 1973) indicated that 102(g) art can be used as "prior art" for the purposes of Section 103, but that 102(c), 102(d) and 102(f) art have no relevancy to prior art under Section 103, (*supra* at 1290). The statement with respect to 102(c), 102(d) and 102(f) was dictum, but will be followed here. [p. 16]

Based on the *In re Bass* decision of the C.C.P.A., the Dooley disclosure will not be considered to be "prior art" for the purposes of Section 103. It will, however, be considered as an indication of what a person having ordinary skill in the art would have known at the time the invention was made.

The Delco Moraine products and the Delco Moraine process

There is no evidence that the Delco Moraine process could be seen by the public. With certain exceptions, information which is kept secret is not prior art under Section 103. *Stamicarbon* v. *Escambia Chemical Corp.*, 300 F. Supp. 1209, 1215 (N.D. Fla. 1969), aff'd, 430 F.2d 920 (5th Cir. 1970), cert. denied, 400 U.S. 944 (1970). [One exception, for example, is a copending patent application, *In re Harry*, 333 F.2d 910, 142 U.S.P.Q. 164 (C.C.P.A., 1964) but no copending patent application is in issue here.] Since the General Motors Delco Moraine process was not open to the public and it does not fall under an exception, it is not "prior art" under Section 103. It can be used as some indication of the level of skill in the art at the time of the alleged invention.

The Delco Moraine brake cylinder return spring assembly, the Delco Moraine brake hold-down spring assemblies, and

the Delco Moraine valve seat and spring assemblies for brake main cylinders, however, fall under Section 102(b) of the Patent Act, because these spring assemblies were "on sale" before the application for the '708 patent was filed.

Section 102(b) provides that a person shall be entitled to a patent unless, among other things, the invention was "on sale in this country, more than one year prior to the date of the application for patent in the United States." [p. 17]

Respondents refer to the Delco Moraine "on sale" products as "prior art," and complainant does not contest this. (Complainant's Post-Trial Main Brief, p. 5.) All parties agree that art under Section 102(b) can be "prior art" under Section 103, and can be combined with other prior art to show obviousness under Section 103.

In *In re Harry*, 333 F.2d 920, 142 U.S.P.Q. 164 (C.C.P.A., 1964) the C.C.P.A. held that "prior art" for the purposes of Section 103 includes art falling under Sections 102(a), (b), and (e), and may be combined with other references to sustain a rejection for obviousness under Section 103. (142 U.S.P.Q. at 167).

The courts have held consistently that prior art found under at least some parts of Section 102 can be combined with other prior art to support a rejection of a patent as obvious under Section 103. *In re Kander*, 312 F.2d 834, 136 U.S.P.Q. 477, at 479 (C.C.P.A., 1963), *Hazeltine* v. *Brenner*, 382 U.S. 252, (1965), *In re Garfinkel*, 437 F.2d 1000, 168 U.S.P.Q. 659, (C.C.P.A., 1971) *Graham* v. *John Deere Co.*, 383 U.S. 1 (1966), *Dale Electronics, Inc.* v. *R.C.L. Electronics, Inc.*, 488 F.2d 382, 180 U.S.P.Q. 225, (1st Cir., 1973) *In re Risse, et al.*, 378 F.2d 948, 154 U.S.P.Q. 1 (C.C.P.A., 1967).

It is found that, like the Dooley disclosure, the Delco Moraine process is not prior art, but that the Delco Moraine "on sale" products are art that can be combined with other

prior art for the purposes of showing obviousness under Section 103. [p. 18]

The scope and content of the prior art

Graham v. *Deere* first requires that the scope and content of the prior art be defined.

The Schaad patent (KX-15), which was cited by the patent examiner in the '708 patent, teaches a method of staking a plurality of unground springs to a metal pan in which upwardly turned rim portions are crimped or bent over the bottom coil of each spring. The springs in the Schaad patent were to be used in a seat but the method was never used. Under the Schaad patent, the bottom or end turn of each spring is spiral or flat, rather than helical. (Tr. 2569, 2574). The upper turns of each spring are helical. Schaad teaches a 360 degree stake rather than staking a number of points. The upper end of each spring is attached to and positioned by a separator pan. There are 1½ dead coils, more or less, at the bottom of the spring. The spring has to swing out slightly behind the inner coil of the first turn to clear the end of the first turn as it starts the second spiral turn. Metal crimped over the inner coil would be forced out over most of one full turn of the spring at least. There would be nothing to stop the metal from crimping the entire first turn, except that the coil moves into a wider spiral just before the beginning of the second turn. As the second coil starts behind the first coil, the second coil would be protected from the crimping metal.

If the crimping metal did not touch the entire first turn of the spring because there was not enough metal to reach out over the part of the spring which is moving away just before starting the second coiled turn, the Schaad patent would teach the securing of less than one turn of a spring to a base. Since it is not clear from the Schaad patent whether the staking metal would [p. 19] cover the entire first turn or just part of it, and

these springs were never produced, it is not clear whether Schaad teaches securing only part of the first turn. Schaad uses a 360 degree staking, but depending on the amount and type of metal used and the force of the staking, the staking may secure only part of the first turn. Because there is a dead coil at the bottom turn, and 360 degree staking, the Schaad attachment of the spring to the base is secure. The staked metal covers all or most of the first turn.

In the Delco Moraine spring brake cylinder return assembly, each spring assembly included two sheet metal seats, each having a central protuberance over which the end turn of the spring is telescoped. (GM Phys. Ex. H-13). The end turn of the helical spring is flat, closed and unground. The end turn is staked onto the seat by telescoping the end turn over the protuberance and then staking the protuberance at four spaced points to hold the spring onto the seat. (GM Ex. 34). One of the staking points is sometimes ineffective because the ramp at the end of the first turn may interfere with the staking. (Shellhause Tr. 2410). This Delco Moraine spring assembly teaches staking of a portion of the lower turn of an unground helical spring to a base when the ends of the spring are closed.

The differences between the claims in issue and the prior art

Graham v. *Deere* then requires that the differences between the claims in issue and the prior art be defined.

Claims 1, 2, 7, 8, 9, 10 and 11 of the '708 patent are in issue. Claims 2, 7, 8, 9 and 10 are dependent on claim 1, and claim 11 is dependent on claim 2. [p. 20]

Claim 1 reads as follows:

> A spring assembly comprising a sheet metal stamping including an annular base portion and a plurality of protuberances formed integrally on said

> base portion and circumferentially spaced around said annular base portion and projecting in one direction therefrom, and a plurality of compression coil springs individually having a portion of one turn secured by each of said protuberances to said annular base portion, said one turn being unground and of uniform cross-sectional material, all other turns of each of said springs being spaced from said base portion, all portions of said springs other than said one turn lying in their free unconstrained positions, said springs projecting in substantial parallelism with one another from said base portion in said one direction.

Claim 1 is not limited to the precise method of attachment by staking which complainant argues is the heart of the invention. Although complainant has taken the position that the question of whether other means of attachment of the springs to the base are patentable is not in issue here, columns 5 and 12 of the specification cover attachment by brazing, wedging the spring over a cylinder, and "other securing means which will still permit the practice of principles of the invention." Claim 1 was intended to claim more than the specific preferred product made by the method described in the specification. The invention described in claim 1 will not be limited by the detailed description of one method to make the product found elsewhere in the specification or by limitations on the product required by the environment in which the spring assemblies will be used, unless this is indicated in the patent itself.

Schaad teaches "a spring assembly comprising a sheet metal stamping" and "a plurality of protuberances formed integrally on said base portion." (KX-15). Although Schaad does not teach an "annular base portion" or protuberances "circumferentially spaced" around it, Dooley disclosed this format to Dulude, and this was not a format invented by

Dulude. It is merely a description of the spring assembly format needed by General Motors. [p. 21]

The Schaad protuberances project "in one direction" from the base. The Schaad patent teaches a "plurality of compression coil springs."

It is not clear whether each Schaad spring "individually" has "a *portion* of one turn secured by" a protuberance or whether the whole first turn is secured to the base. In the Delco Moraine brake cylinder return spring assembly, only a portion of one turn is secured by a protuberance to the base. The Delco Moraine assembly is not firmly "secured" by the four point staking, (and need not be for the purposes for which it is used). "Secured" in claim 1 is read as requiring a firm attachment because of the dictionary definition of this word. The Schaad patent teaches a secure attachment by staking.

Although the patent examiner may not have been aware of this, Schaad's bottom turn is unground. (Tr. 925). Delco Moraine's bottom turn also is "unground and of uniform cross-sectional material." "All other turns" of each Delco Moraine spring are "spaced from" the "base portion", although this is not true in Schaad. All the springs in Schaad project "in substantial parallelism with one another" from the base in "one direction."

Claim 1 calls for the top ends of the springs to lie in their "free unconstrained positions", and in substantial parallelism with one another from the base in one direction, suggesting that the top ends of the springs must be unconstrained and relatively parallel to one another in one direction, but not necessarily perpendicular to the base. Neither Schaad nor Delco Moraine shows the top ends of the springs unconstrained. In Schaad the springs are parallel, but the top ends are held in position. The Delco Moraine spring assembly is staked on both ends, and it sometimes has a severe lean. In Delco Moraine each spring is a separate spring assembly, and

not a "plurality of compression coil springs", so the springs are not parallel to one another. [p. 22]

All the elements in claim 1 are found individually (but not in combination) in the prior art, except the format of the spring assembly needed by General Motors, and the requirement that all turns of the spring other than the lower turn lie in their free unconstrained positions.

Claim 2 reads as follows:

> The combination of claim 1 in which each of said protuberances include a lip portion and in which at least a portion of the lower turn of the one of said springs individual thereto is trapped between said lip portion of the protuberance and said annular base portion.

Claim 2 adds the limitation that at least a portion of the lower turn of the springs is trapped between the lip of the protuberance and the base. This claim could cover attachment of the spring by means other than staking. The spring could be snapped over the lip and be trapped between the lip and the base. Claim 2 is not restricted to what the applicants now claim is their invention.

The Schaad patent discloses staking at least a portion of the lower turn and trapping it between the lip of the protuberance and the base, but in Schaad, the lower turns of the springs are coiled rather than helical. The Delco Moraine spring assembly discloses staking of a helical spring and trapping at least a portion of the lower turn between the lip of the protuberance and the base.

The only new limitations found in claim 2, beyond those in claim 1, are found individually in the prior art.

Claim 7 reads as follows:

> The combination of claim 1 in which a portion of said one turn of each of said springs is also spaced from said base portion. [p. 23]

Claim 7 adds to claim 1 the limitation that a portion of the lower turn of each spring is also spaced from the base portion. This is not found in Schaad, where about the lower 1½ turns are coiled, but Delco Moraine shows a staking of a helical spring where part of the lower turn is spaced from the base. Delco Moraine, however, does not show an assembly of parallel springs, nor does it "secure" the springs firmly to the base, as called for in claim 1. The only new limitation in claim 7 is found in the prior art.

Claim 8 reads as follows:

> The combination of claim 1 in which the axis of said all other turns of each of said springs is substantially perpendicular to said base portion.

Claim 8 adds the limitation that the springs will stand substantially straight. This makes more specific the limitation already found in claim 1 where the springs are required to be substantially parallel to one another in one direction from the base. Under claim 1, they could all lean in the same direction. Under claim 8 they would have to be substantially perpendicular to the base. Under Schaad, all the springs are straight, or substantially perpendicular to the base.

The only new limitation found in claim 8 is found in the prior art.

Claim 9 reads as follows:

> The combination of claim 1 in which each of said springs is secured to said annular base portion by permanent distortion of said sheet metal protuberances.

Claim 9 adds to claim 1 the limitation that the springs are secured to the base by permanent distortion of the sheet metal protuberances. Claim 9 would eliminate some methods of attachment otherwise covered by claim 9. [p. 24]

Schaad and the Delco Moraine spring assembly both teach a permanent distortion of the sheet metal protuberances by staking.

The only new limitation found in claim 9 is found in the prior art.

Claim 10 reads as follows:

> The combination of claim 1 in which said all other turns of each of said springs including the turn most remote from said one turn are unground and of uniform cross-section material.

Claim 10 adds to claim 1 the limitation that all "other" turns of each spring, including the top turn, be unground and of uniform cross-sectional material. In the Delco Moraine spring assembly all turns are unground and of uniform cross-sectional material. The only new limitation found in claim 10 is found in the prior art.

Claim 11 reads as follows:

> The combination of claim 2 in which each said one turn is closed.

Claim 11 adds the claim 2 limitation to claim 1 (trapping part of the lower turn of the spring between the lip and the base), and the further limitation that the lower turn is closed. Delco Moraine shows the lower turn closed.

The only new limitation added by claim 11 is found in the prior art.

Obviousness

Finally, *Graham* v. *Deere* requires consideration of the question of whether the differences between the claims and the prior art would have been obvious to a hypothetical person with ordinary skill in the pertinent art at the time the invention was made. [p. 25]

The differences between the claims in issue and the prior art would have been obvious to a hypothetical person with ordinary skill in the pertinent art at the time the invention was made because the inventions described in the claims in issue are much less limited than the narrow invention complainant now distinguishes from the prior art.

Kuhlman defines the invention which it is claiming here very narrowly, as the specific securement of helical springs to a stamping in a way that will meet all the limitations in each claim, as well as the limitations in the preferred form of the invention described in the specification and in the environment in which the product is to be used. Kuhlman does not argue that Dulude's idea that he would try to stake the springs to the seat was the invention. Kuhlman contends that the specific manner in which the springs were secured to the base made a small but new contribution to the art. Respondents define the invention so broadly that most of the elements of the invention are readily found in the prior art.

The patentable invention was a spring assembly on a sheet metal base in which only a small portion of the lower turn of each helical spring was staked to the base by a protuberance in a particular way that achieved a surprisingly strong attachment. The helical springs, all turns of which functioned except the bottom turn, were substantially parallel, relatively straight, and free standing.

The '708 patent claims were not allowed by the patent examiner until the unique method of staking used by Dulude

and Winbigler was disclosed, and distinguished from the Schaad patent. (KX-2). (One distinction applicants may have tried to make between Schaad and their invention was that Schaad had a ground lower turn. Claim 1 as allowed requires the lower turn to be unground. Schaad's lower turn, however, was in fact unground, and this would not have been a valid distinction. (Tr. 925)). [p. 26] Although the method of attachment (staking) was not new, the combination of prior art which worked was not predictable from the known art at that time. Winbigler attached the spring to the base by staking part of the lower turn with an extremely small amount of metal. The attachment was small, and except for the lower turn, it did not interefere with the functioning of the helical spring. Surprisingly, it did not have to use a coiled bottom turn to assure a secure grip, yet the springs were securely attached, unconstrained at the top, and relatively straight. The problem of getting all the necessary features in the spring assembly when such a small amount of metal was available for staking had not been solved by General Motors or by any other spring supplier until long after the Dulude/Winbigler solution. The Dulude/Winbigler solution was simple but inventive, it solved a troublesome problem, and it filled a need that had been expressed by General Motors.

The specification in the '708 patent might have supported a patentable claim narrower in scope than those in issue, but if that narrow invention was the one applicants intended to claim, the '708 patent claims do not particularly point out and distinctly claim the subject matter which the applicants regarded as their invention, as required by Section 112. The fact that Quality Spring may have been the first to invent a satisfactory means for attaching springs to a base plate does not entitle it to broad claims covering all possible means for attaching springs. *In re Ferguson*, 88 F.2d 693 (C.C.P.A. 1936).

The Supreme Court has held that the invention is defined in the claims, and a claim which is too broad cannot be saved

by limitation to products produced in accordance with the process set out in the specification. *General Electric Co.* v. *Wabash Appliance Corp.*, 304 U.S. 364 at 374 (1938). An overly broad claim will not be saved by restricting it to a more limited patentable invention. *MacLaren* v. *B-I-W Group Inc.*, 535 F.2d 1367 (2d Cir. 1976). Each claim, therefore, [p. 27] will be read separately, and the limitations expressly found in that claim will define the scope of the invention claimed therein. The invention claimed in the '708 patent is extremely broad.

The '708 patent claims are not limited to a spring assembly made by the particular method invented by Dulude and Winbigler. Alternative methods such as welding, brazing, gluing, or a friction fit (snapping springs over protuberances) could be covered by most of the claims, and the patent itself states that alternative methods were contemplated.

When the prior art fails to teach the critical result of an invention, even when the claimed structural changes are minor, the invention is patentable. *Saf-Gard Products, Inc., et al.* v. *Service Parts, Inc., et al.* 532 F.2d 1266 (9th Cir. 1976).

A combination of all that is taught by the prior art failed to teach one how to do what Dulude and Winbigler did. They attached a set of helical springs securely to a base by staking a small amount of metal from a protuberance in the base to part of the lower turn of each spring, they kept the springs relatively straight and parallel to the other springs, and they kept all turns of the springs except the lower turn free and unconstrained. The Delco Moraine four-point stake was not a secure attachment and it often caused a severe lean in the springs. The Schaad invention used a separator pan to keep the top ends of the springs in place. Only the Dulude/Winbigler invention met General Motors' needs for a spring assembly. Some of the prior art teaches away from the precise method of attachment that Winbigler discovered would work. For example, the Schaad patent teaches that a coiled lower

turn is necessary to get a secure attachment when you stake a functional helical spring to a base. Winbigler staked only a small part of the bottom turn of a helical spring, without wasting metal in a dead coil at the bottom of the spring. [p. 28]

All the prior art cited against the '708 patent was known at General Motors, but General Motors did not solve the problem. No other General Motors spring supplier found a solution until long after the '708 patent application was filed in 1971. If General Motors had spent the time and money necessary to solve this problem, it might have solved it. As it was, only a small amount of effort was devoted by General Motors to the problem. Complainant, on the other hand, put Mr. Winbigler, a skilled craftsman and spring expert, to work on the problem for a long time and at considerable cost. If the problem were easy to solve, or if the solution were obvious, it would have been solved by General Motors or by one of the other spring suppliers promptly and without difficulty. There was an invention, and although it was a minor invention, it was not obvious.

Nevertheless, the claims are broader than the invention. A claim can distinctly claim an invention broader than the specific embodiment of the invention disclosed in the specification, but it cannot be broader than what the applicants invented. In the instant case, the claims are so broad that any minor differences between the claims and the prior art would have been obvious to a hypothetical person with ordinary skill in the pertinent art at the time the invention was made, because the claims merely combine well know elements of the prior art.

The only elements of the claims in issue which are not found in the prior art are the format of the spring assembly (a number of springs set in a circle around an annular base straight and parallel without being constrained at the top or above the first turn). The format was a result of General

Motors' need for a spring assembly with this configuration. It was part of the problem, not the solution. Dooley told Dulude that this was the design needed, and showed [p. 29] him the Kruse model illustrating the concept. Not only would this design have been obvious to anyone confronted with the problem faced by General Motors, but General Motors in fact told all its spring manufacturers that this was the design it needed. This cannot be the only inventive contribution made by Dulude and Winbigler because it would not support a patentable invention. Dulude and Winbigler did not invent the design, but only a means to achieve it by a permanent attachment of the springs to the base.

The only remaining question is whether the combination of the elements found in the prior art would have been obvious to one with ordinary skill in the art. Clearly, once the format of the spring assembly was known, it would have been obvious to try to attach the springs by welding or brazing or gluing or snapping the springs over a protuberance or staking. Kruse already had a glued model, and welding, brazing and "snapping over" had been considered by General Motors. What the claims described was obvious, but would not necessarily work. What Dulude and Winbigler found would work is not described in the claims.

In *Anderson's-Black Rock, Inc.* v. *Pavement Salvage Co. Inc.*, 396 U.S. 57 (1969) the Supreme Court distinguished between a combination of elements known in the prior art which have an effect greater than the sum of the several effects taken separately (a synergistic effect) and a successful combination of elements known in the prior art which would have been obvious to one skilled in the art. The Supreme Court indicated that the first constituted invention, but the second did not. In the instant case, no synergistic effect is claimed. The combination of known elements covered by the broad claims of the '708 patent would have been obvious to one with ordinary skill in the art. [p. 30]

Secondary Considerations

The spring assemblies have had commercial success, (KX-66, Tr. 3665) and the product has been imitated. The products manufactured by Wallbank, Peterson and Associated Spring are indistinguishable from Kuhlman's products. Only one supplier has produced a successful alternative design (the Rockford welded spring assembly). The Supreme Court has held, however, that more than success is needed to show invention. *Anderson's-Black Rock, Inc.* v. *Pavement Salvage Co., Inc.*, 396 U.S. 57, at 62 (1969).

There is evidence that there was a long felt need for this product. A spring tangling problem existed at the General Motors assembly plants prior to the present invention. (Tr. 47-48, 596-602, 706-707). The problem of springs jiggling out of place after assembly existed at General Motors prior to this invention. (KX-90, p. 21-22, KX 91-93). If the springs are out of place when assembled in a transmission, an expensive tear-down of the transmission may be required. (Tr.805-806). The automatic spring feeders used in some General Motors plants were so troublesome that General Motors considered reverting back to inserting the springs by hand. (KX-90, p. 33-34). Both the automatic feeder and the hand assembly method sometimes resulted in springs being omitted. (KX-90, p. 26, 34). Mr. Kobs, a General Motors engineer, testified that the production people would have bought the Quality Spring assemblies at any price, even though the cost savings were not large. (KX-129, p. 26-29).

Mr. Williams of Buick Motors Division told Quality Spring that he intended to nominate it for the "Supplier of the Year" award in the Auto Products Magazine award competition for 1972, for the spring assembly. Although the nomination [p. 31] was not made, the conversation with Mr. Williams shows that at least some people at General Motors felt that the Quality Spring product filled a need at General Motors, and this was confirmed by GM's subsequent purchases of this product.

A long felt need for a product is some evidence of the patentability of the product, but it does not support the validity of claims going beyond the scope of the invention. Quality Spring had a unique product, it filled a need, and the usefulness of the product was recognized by General Motors and Ford.

Even though complainant may have had a patentable product, the claims in the '708 product patent are simply too broad to be valid. If they were valid, they would narrow the field of prior art freely available to others, and take out of the public domain information that had been public for years.

In *General Electric Co.* v. *Wabash Appliance Corp.*, 304 U.S. 364 (1938), the Supreme Court held that the claims "measure the invention", and refused to read the claims as implicitly limited to products made in accordance with the process set out in the specification. The Court noted that the inventor must inform the public of the limits of the monopoly asserted, so that it may be known which features may be safely used or which products manufactured without a license.

Section 112 of the Patent Act requires that claims be particular and distinct to give warning to others as to what constitutes infringement, and to define the invention for determination of patentability. 2 Donald S. Chisum, *Patents*, §803. The claims of the '708 patent in issue here fail to define with particularity what the applicants now describe as their invention, but they do claim with particularity a much broader invention, which applicants did not invent. [p. 32]

2. Failure to disclose the best mode

Respondents contend that both patents in issue are invalid for failure to disclose the "best mode" as required by 35 U.S.C. 112. This section requires that the inventor set forth the best mode contemplated by him of carrying out his invention.

One of the first problems faced by Mr. Winbigler in developing a staking method was that the springs leaned after they were attached to the base. They tilted so much that they would not fit on the nubs of the clutch piston. (Tr. 503).

There is only a small amount of metal available for distortion or for staking over the end of the spring. (Tr. 453-456, 1113-1118). Very little of the spring can be held by the small amount of metal available. (Tr. 369-383). Since only a small part of the bottom turn can be staked, it is difficult to assure that the springs will be securely attached and that they will stand relatively straight and parallel to one another, although the top ends of the springs are free and unconstrained.

After many different methods of staking were tried, including staking more than one point of the bottom turn, and staking higher up on the turns of the spring, Winbigler found a method that would work. (Tr. 252-260). He found that a specific machine and staking tool would produce a relatively straight set of springs and a secure attachment to the base. The springs attached by this method initially leaned in all directions after staking. [p. 33]

After the final machine and staking tool had been made, the lean of the springs was found to be predictable. The lean was in the same direction for each spring relative to the cutoff of the end turn of that spring. Once this is known, it is a simple matter for any spring coiler set up man to adjust the springs as they are made to compensate for the predictable lean after staking. (Tr. 574, 575). The record does not support respondents' contention that Qualtiy Spring attempted to keep this problem and its solution a secret after the patent issued. (KX-174).

The question is whether the applicants for the '708 and '287 patents had an obligation to disclose that under the "best mode" known to them at that time, the springs would lean after staking, and the lean would be in a predictable direction

relative to the cutoff of the end turn, or relative to their angular orientation at the time they were attached to the scamping. (Tr. 259, 260).

If the best mode of the patented method always resulted in a predictable lean in the springs after staking, the applicants should have disclosed in the specification that the springs would lean in a predictable way after staking and they should have disclosed how the lean could be predicted, unless the predictable lean would have been obvious to someone skilled in the art of making springs if he observed the springs for a reasonably short period of time. General Motors argues that the specification disclose that the spring coiler should be adjusted to reduce the diameter of the end turn, so it should have disclosed the adjustment to be made to compensate for the lean after staking. [p. 34]

In his early testimony, Mr. Winbigler indicated that the leaning of the springs had been a problem for months, and that they had tried a number of different ways to attach the springs to avoid the leaning problem.

In his later testimony, Mr. Winbigler was asked how long it took to determine that the springs were leaning in a predictable direction *after* the final staking method had been adopted. He testified that "he would not have thought" that it would take "too long" to determine that the springs were leaning "according to the way the spring is put on." (Tr. 575-576). Mr. Winbigler's later testimony on this point is vague. He simply could not remember how long it took for those on the project to determine that the springs leaned in a predictable direction. No other testimony was offered.

Since a patent is presumed to be valid, the burden of proof is on respondents to show that the essential elements of the best mode of practicing the invention were not disclosed. This burden has not been sustained for the following reasons:

(1) Mr. Winbigler's testimony suggests that it would not be too difficult for someone skilled in the art to determine the predictable lean after an short period of examining the springs. Routine steps of an invention need not be disclosed. Although it is not at all clear that the step of finding the predictable lean was merely a routine step, if an experienced spring man could determine the way the springs were leaning, he could correct the lean by a routine adjustment of the spring coiler.

(2) In the Wallbank process, no preset lean to compensate for a post-staking lean is required. (Tr. 3172). Wallbank produced spring assemblies which are virtually identical to Quality Spring's spring assemblies, but there [p. 35] were enough differences in the machine and staking tool made by Wallbank that no predictable lean occurred after staking. The "predictable lean" is not a necessary consequence of practicing the invention, even using the "best mode" described in the specification.

(3) Mr. Winbigler testified that he disclosed every step of the process to his patent attorney. If the attorney did not disclose this step to the patent examiner it was not because the applicants desired to keep it a trade secret, but because the attorney believed it to be a routine step, and not part of the invention. The C.C.P.A. has held that there is no objective standard by which to judge the adequacy of a best mode disclosure. Instead, only evidence of concealment (accidental or intentional) is to be considered. *In the Matter of the Application of John W.C. Sherwood*, 613 F.2d 809 (C.C.P.A. 1980), at 816. In the instant case there was no evidence of concealment.

(4) The patent figures show the end turn of the spring as being flat and closed. The end turn of the springs used by complainant both before and after staking are flat and closed. The springs before staking vary from squareness (i.e., they

lean) by one to three degrees. (Tr. 3649). The tolerance permitted by the General Motors specifications for spring assemblies is three degrees. (Tr. 1285). Complainant's springs before staking therefore are flat, closed, and substantially square. (Tr. 535). After staking, they are flat, closed and square. Complainant is practicing the method set forth in its patents, and the patents give others adequate information to use the invention, and to make products identical to complainant's spring assemblies. [p. 36]

It is found that respondents have not established that the applicants' failure to disclose the predictable lean of the springs after staking was a failure to disclose the best mode under Section 112. The '708 patent is not invalid for this failure to disclose.

INFRINGEMENT OF THE '708 PATENT

The parties have stipulated that claims 1, 2, 8, 9, 10, and 11 of the '708 patent are readable on the spring assemblies in issue which are made by Wallbank. The parties did not stipulate that claim 7 of the '708 patent is readable on Wallbank's spring assemblies.

Claim 7 of the '708 patent reads as follows:

> The combination of claim 1 in which a portion of said one turn of each said springs is also spaced from said base portion.

Since the parties stipulated that claim 1 reads on the Wallbank spring assemblies, the remaining question is whether a portion of the "said one turn" of each spring is also spaced from the base portion. The "said one turn" refers to the "one turn" in claim 1 which is secured by a protuberance to the annular base portion.

Each Wallbank spring has a closed end. At one point in the bottom turn, the spring moves off the base and forms a "ramp" going up over the part of the spring making the closed end. The portion of "said one turn" (the bottom turn) consisting of the "ramp" is spaced from the base because it does not touch the base as it moves up over the closed end. The Wallbank springs therefore infringe claim 7 of the '708 patent. [p. 37]

The evidence shows that Quality Spring is making a product which falls under claims 1, 2, 8, 9, 10, and 11 of the '708 patent. The Quality Spring "Transpak" spring assembly (Kuhlman Phys. Ex. B to AA, for example) is virtually identical to the Wallbank spring assembly, except for the small mark identifying the manufacturer. (Kuhlman Phys. Ex. NN and OO, for example).

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(The balance of the Opinion, part of which is confidential, does not pertain to the '708 patent.)

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[p. 71] FINDINGS AND CONCLUSIONS

The following findings of the parties are adopted:

Kuhlman

Findings A-1 through A-18, B-1, B-6, B-16, B-19, C-2, C-3, C-5, C-7, C-8, C-10, C-13, C-21, C-22, D-4, D-5, D-6, D-8, D-12, E-2, E-4, E-7, E-10, F-1 through F-4, I-1, J-2, J-3, J-6, K-2, L-1, M-1 through M-5, M-7, M-8, M-10, M-21, M-22, M-23, N-3, N-7, and N-8.

Conclusions 1, 2, 26, 27, and 30-34.

Wallbank

Findings 1 through 7, 9 through 11, 15 through 21, 23, 24, 27, 28, 30-33, 37 through 48, 50 through 57, 59, 64 through 67, 70, 78, 81, 87, 89, 90, 92, 94, 96 through 98, 100, 101, 104, 107, 108, 110, 111, 112, 117, 124, 125, 134, 139, 141, 146, 152, 156, 160, 162, 163, and 165. From p. 60 through p. 79, Wallbank has a second group of findings numbered 136 through 175. The following findings in this section are adopted: 139, 141, 151, 156, and 169. In addition, findings 188, 197, 202 through 204, 206, 207, 213, 219, 220, and 221 are adopted.

General Motors

Findings 1 through 5, 9, 11, 13, 14, 15, 17, 18, 19, 20, 22, and 26. [p. 72]

Commission Investigative Attorney

Findings A-1, A-3 through A-7, B-1, B-2, C-1 through C-4, C-6 through C-8, C-9 through C-13, C-17, C-19 through C-22, C-24, C-26, C-31 through C-33, C-35, C-39, C-41, C-42, C-44, C-46, C-53, C-54, C-55, C-57, D-1 through D-18, E-1 through E-5, F-1 through F-3, and F-17 through F-31.

Conclusions A, C, F, G, and H.

Parts of many of the findings of the parties which were rejected would have been accepted if filed as separate findings. The findings relied upon in this recommended determination are found herein, and are based on the evidentiary record rather than the findings of the parties.

After consideration of the evidentiary record and the arguments of the parties, it is found that:

1. The Commission has jurisdiction over the subject matter of this case.

2. The '708 patent is not valid, and therefore it cannot be infringed.

3. Claims 1, 2, 7, and 31 of the '287 patent are valid, but claim 29 is invalid.

4. There was no fraud on the Patent Office in connection with either patent.

5. Allegations of antitrust violations by Kuhlman were not sustained, and the two patents have not been misused.

6. The '287 patent is enforceable, and enforcement is not barred by laches or equitable estoppel. Quality Spring practices the invention of the '287 patent. [p. 73]

7. Some spring assemblies manufactured by Wallbank in Canada and imported into the United States and used by General Motors and Ford are made by the method or process called for in claims 1, 7, 29 and 31 of the '287 patent. If claims 1, 7, 29 and 31 are valid, and if the spring assemblies were manufactured in the United States, they would infringe these claims.

8. By importing spring assemblies manufactured by Wallbank into the United States, under the circumstances set forth

in paragraphs 1-7 hereof, Wallbank, General Motors and Ford have engaged in unfair acts under Section 337.

9. The part of Quality Spring Products division of Kuhlman which is devoted to the manufacture and sale of the spring assemblies is the domestic industry for the purposes of Section 337.

10. The domestic industry is economically and efficiently operated.

11. The unfair acts had the effect or tendency to injure substantially the domestic industry.

12. Wallbank, General Motors and Ford have not established any equitable defense to a Section 337 violation.

RECOMMENDATIONS

It is recommended that the Commission find that Wallbank, General Motors and Ford are engaging in unfair acts under Section 337, the effect or tendency of which is to injure substantially an efficiently and economically operated domestic industry.

Dulude et al patent 3,782,708, Claims Charged

1. A spring assembly comprising a sheet metal stamping including an annular base portion and a plurality of protuberances formed integrally on said base portion and circumferentially spaced around said annular base portion and projecting in one direction therefrom, and a plurality of compression coil springs individually having a portion of one turn secured by each of said protuberances to said annular base portion, said one turn being unground and of uniform cross-sectional material, all other turns of each of said springs being spaced from said base portion, all portions of said springs other than said one turn lying in their free unconstrained positions, said springs projecting in substantial parallelism with one another from said base portion in said one direction.

2. The combination of claim 1 in which each of said protuberances include a lip portion and in which at least a portion of the lower turn of the one of said springs individual thereto is trapped between said lip portion of the protuberance and said annular base portion.

* * *

7. The combination of claim 1 in which a portion of said one turn of each of said springs is also spaced from said base portion.

8. The combination of claim 1 in which the axis of said all other turns of each of said springs is substantially perpendicular to said base portion.

9. The combination of claim 1 in which each of said springs is secured to said annular base portion by permanent distortion of said sheet metal protuberances.

10. The combination of claim 1 in which said all other turns of each of said springs including the turn most remote from said one turn are unground and of uniform cross-sectional material.

11. The combination of claim 2 in which each said one turn is closed.

* * *

GM Rule 28.1 Listing

The following information is provided by General Motors Corporation pursuant to Supreme Court Rule 28.1: All U.S. and Canadian subsidiaries of General Motors Corporation are wholly owned with the exception of Motor Enterprises, Inc., which is partly owned by the U.S. Small Business Administration.

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